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BIOLOGIC PREPARATION FOR STUDY OF MEDICINE AND DENTISTRY*

FREDERICK C. WAITE, PH.D.
Professor of Histology and Embryology, Western Reserve University
CLEVELAND

If we are to get any critical conception of what should be the aim in the ten to thirteen years of high school, college and professional school preparation of students, we must first get a clear idea of the major requirements in the subsequent careers of these students. I believe that in this particular the teachers in undergraduate colleges have a somewhat hazy appreciation.

What are the characteristics and capabilities demanded of the practitioner of medicine and dentistry? There are many, but from them stand out a few that are paramount.

SOME REQUISITES FOR PROFESSIONAL PRACTICE

First of all is intellectual honesty. The practitioner must be scholastically and professionally honest with himself and with his clientele. He not only must know well what he knows, but he must be cognizant of what he does not know. He must appreciate clearly and acknowledge his own limitations of knowledge and skill, in order that he may seek help. Any other attitude constitutes a menace to his patient.

Ordinary honesty may be innate or, more usually, it comes from family training; but intellectual honesty is largely acquired in the course of school training. Especially do science courses offer opportunity for its acquisition. In such courses conjecture and bluffing must be abjured, intellectual indolence proscribed, and the student led to base his conclusions only on facts established, as far as possible, by his own observations, and then taught to be willing to admit when he does not know a thing.

A second requisite demanded of the practitioner is ability to observe accurately, analytically and in an orderly fashion. He must be able to separate the salient facts and conditions from those that are only incidental. He must be able to correlate his observations and get them into a proper order to be used in arrival at correct deductions. These observations are not alone visual but also auditory, tactile and, to a less extent, olfactory and gustatory. His personal observations must be supplemented by information acquired through inquiry. Hence the receptive senses must be carefully trained, to which must be added a critical attitude of mind and a sense of proportionate values that will enable him to evaluate evidence properly.

* Read before the Ohio Academy of Science, Columbus, April 10, 1926.

A third requisite is the ability to solve problems. Every patient is a problem. To be sure, many of the patient problems are closely similar; but new ones constantly arise and obscuring factors continually intrude, while unfamiliar combinations afford puzzles that must be solved. Hence the practitioner must, following careful observation and the evaluation of evidence, be able to make correct deductions and to reason from cause to effect and inversely from effect to cause. This requires careful and accurate thinking, something that is not innate but must be acquired by careful handling of whatever subject matter is used for training.

A fourth type of ability that the professional practitioner must have is in the field of acquiring information. This type of ability is more easily and more quickly acquired than either of the three others I have mentioned. It cannot be all a matter of memory but must also include ability in securing information; i. e., a knowledge of literature in the especial field at issue. The acquisition of intellectual honesty, power of observation, and ability to solve problems all require an early beginning and continuity of effort. The acquisition of information may be secured with less lapse of time and is not as intricate a process. It is not as high a test of intellectual ability as are the others, and if these other capabilities are possessed they will assist, not only in acquiring information, but also in understanding it, which is far more important.

THE PROBLEM OF PREPARING MEN FOR THE MEDICAL AND DENTAL PROFESSIONS

The problem of preparing an individual for a successful and useful professional career is a continuous problem from the grade school onward to entrance into professional practice. In this, educators have usually made a fundamental educational error and have considered the education in the secondary school, in the college and in the professional school as three separate entities. They are not. Through them all runs a single motif. To be sure, it is differently developed in each of these three types of educational institutions; but the whole progress from entrance to high school to entrance in the profession is a single process, and when so treated will greatly add to the effectiveness of the entire educational and professional career.

We are not yet ready to bring the secondary school into this problem, but I believe we can fruitfully discuss the part of the college and the part of the professional school in this joint problem. To that end I want to take up the part of each group in respect to the training of the student in those four types of capabilities which I have selected as of outstanding need to the practitioner of medicine or dentistry.

I shall take first the one last mentioned; namely, giving the student his informational armamentarium. Time does not permit discussion of the entire problem, and therefore I shall restrict myself chiefly to the information that lies in the field of the biologic sciences, since both medicine and dentistry are, in large part, applied biology, to which is appended a certain amount of mechanical skill in surgery and in operative dentistry.

The information that is used in professional practice is almost entirely of a type that must be expounded in the courses in the professional schools; therefore the courses in the undergraduate college do not have much responsibility in presenting information to be directly used in professional practice. This responsibility must chiefly be assumed by the professional schools.

Nevertheless, the teaching in the professional school must be largely built on a scaffolding of information acquired in the undergraduate college. This is a foundation and on it is built the superstructure that is of direct use in the professional career. Along with this foundation of biologic and other information in the sciences should be acquired much that is ancillary and of use to the physician or dentist, not so much for direct utilitarian application to his technical professional practice as to his relations as a citizen and fellow man.

BIOLOGIC INFORMATION THAT SHOULD BE ACQUIRED IN COLLEGE

Disease is chiefly disfunction; but, in function, structure is a dominant factor, and chronic disease is frequently due to abnormality of structure accompanying abnormal function. Neither abnormal structure nor abnormal function is a factor of the organism as a whole, nor of the organs nor even of the tissues, but may be resolved ultimately as far at least as cellular units, and the summation or resultant of the structure and functions of the constituent cells in the aggregate form the observed phenomena.

Hence the basis of both normal and abnormal structure and function lies in the cell. It should be apparent that information and understanding of the structure and function of the cell is the very foundation for any one who contemplates either medicine or dentistry.

Twenty-five years of observation of medical and dental students in my classes coming from colleges of all parts of the country, but largely from Ohio, convinces me that the chief deficiency of these men in biologic information is lack of knowledge of the cell. Such simple things, to mention only a few, as the difference between the wall of plant cells and the cell membrane and ectosarc of animal cells, the fundamental and derived shapes of cells, the fundamental properties of protoplasm, the regulative function of the nucleus, the relation of cells to their products in the composition of tissues, seem to many, even to most students, as unheard of novelties. Two thirds of my students state that they never heard of polarity of cells. At least a third of them affirm that they have never seen a mitotic figure except in textbooks, charts or blackboard diagrams. When it comes to the functions of cells, most of these students are limited in their knowledge to ameboid movement, ciliary action and intracellular circulation of protoplasm in plant cells. Many students have not even seen this much, their entire conception resting on their acquaintance with nonliving or at least inactive cells.

I believe I know the procedure that brings this result. What cytology is given in the usual undergraduate course in biology is given in the first days of the introductory course, when the student is a novice in observation and in biologic comprehension. This meager acquaintance is soon obliterated by the mass of new information in the courses, and the student never returns to anything but incidental study of the cell. It appears to me that the student who plans to use his biology, and especially those who expect to enter on a medical or dental course, should have, in some of the advanced courses, a review of the main facts of cell structure and function. Such a review should be more than a didactic consideration, and should include laboratory work covering a considerable variety of cell types and some of them living. After dealing with many organisms, all composed of cells and their products, the student will be able to appreciate and understand the cell as itself in a way utterly impossible in the first days of his first course in biology.

The one great need of students entering the professional schools is a comprehension of the fundamental facts of cell structure and function, and their differentiation. They do not bring this preparation to their professional school study.

If a student is to be taught to observe, he must be able to use the especial instrument of biologic observation. It no longer surprises me, as it did in my early years of teaching, when, on the first day we issue microscopes in the histologic laboratory, I see two or three men out of seventy-five attempt to use the microscope with the open part of the base turned toward them. Several in each class do not know the difference between an objective and an ocular; a third of the class know knothing about focal distance or focusing; and the great majority know nothing about substage condenser, use of mirror, or use of iris diaphragm in controlling light.

Inquiry shows that some students have never handled a microscope, their acquaintance with the instrument having been confined to looking at demonstrations set up by the instructor. For a considerable number, use of the microscope has been restricted to the early days of an elementary course, when they studied a few unicellular organisms.

We cannot expect the students entering the professional schools to know the optical theories and formulas involved in the microscope, or the mechanical details of the construction of the instrument, but we do believe that the undergraduate courses in biology should send us men with a working knowledge that will permit effective use of the microscope from the outset.

The undergraduate course in biology should give the preprofessional student a knowledge of the fundamental facts of vertebrate structure and function of the several organ systems of vertebrates. By this I certainly do not mean the structure of man, or even mammalian structure, but those common vertebrate characteristics, such as coelom, axial and appendicular skeleton, circulation, excretion and tropisms. One of the unfortunate tendencies in professional schools is to make everything anthropomorphic; and if the student is to get any comprehensive and comparative idea of man in his structural and functional relations to other vertebrates, he must get a firm basis of vertebrate anatomy in the undergraduate college.

This can best be given by a course in comparative vertebrate anatomy rather than by a course in mammalian anatomy. In such a course at least three forms should be carefully considered, not as separate entities, but with especial emphasis on comparative relations, with more attention to the quality of the course than to an extension of scope. Three forms well done are far

better than four or five superficially done, and in these major emphasis should not be put on the mammals. For choice of forms, an elasmobranch, a urodele and a mammal seem best. An anuran, a chelonian or a bird are too highly specialized to fit into the picture unless the course covers two semesters, but the student should come to the professional school with a familiar grasp of the classification and characteristics of the classes of vertebrates and the larger groups of each class, including knowledge of the characteristic structural differences of the major groups. It is surprising to find students who do not know the difference between urodeles and carnivora, though if one cites as examples a mud puppy and a dog they will realize that there is some difference in the external appearance at least.

Comparative vertebrate anatomy gives an admirable opportunity to teach the correlation of structure and function, including change of function and progressive specialization. It must be borne in mind that in the earlier years of the professional course there is a growing tendency to clinical applications that are largely functional. Physiologic anatomy is rapidly replacing purely morphologic consideration, and the undergraduate courses in biology can do much to accustom the student to think of structure and function as inseparable; but care must be taken to avoid the tendancy to teleologic reasoning that leads a student into the habit of stating that a given structural condition is for the purpose of performing some stated function.

The undergraduate courses in biology should give the preprofessional student a good grounding in the salient points of biologic philosophy. The professional student needs to know the main arguments and conclusions regarding evolution, heredity, mendelism, physiologic division of labor, the fundamental law of biogenesis, sexual dimorphism, parasitism, metamerism, differentiation, and some others that will occur to every teacher and which can be taught in connection with any of several types of courses both zoological and botanic.

There are, to be sure, a great many courses lying between cytology and comparative vertebrate anatomy that are of value to the preprofessional student, some of them essential intermediate steps; but in general it is unwise to give courses that anticipate the courses that lie in the province of the professional school. Such subjects as pathogenic bacteriology, mammalian physiology, microscopic anatomy of mammalian organs and human anatomy had better be left to the professional school and the time given to subject matter that cannot be treated in the professional school.

CAPABILITIES REQUISITE FOR PROFESSIONAL PRACTICE

So far I have discussed only the matter of informational training, in which field the undergraduate college and the professional school have somewhat different responsibilities. I now come to the training in those three other selected requisites of the professional career, namely, intellectual honesty, ability in observation, and power to solve problems. In these the teachers in undergraduate college and the professional school have a common and joint responsibility. The problem is one of continuity, although the subject matter used in the training may be somewhat different. In fact, almost any field of science offers opportunity for effective training in these capabilities. Chemistry, physics, geology or even mathematics, each affords admirable material, but I shall consider the especial opportunities that lie in the biologic subjects.

TRAINING IN INTELLECTUAL HONESTY

By training in intellectual honesty, I do not lay great emphasis on argument against such crudities as cheating in examinations, or copying or faking laboratory records. While these are highly immoral, they so thoroughly convict the perpetrator of asininity that they should immediately exclude him from entrance to a professional career on the basis not only of immorality but also of incomprehension. Such practices may deceive the instructor, but much more disastrously they also deceive the person who is guilty of them, for thereby he secures a false rating by his instructor, a status that he cannot live up to, for he has secured the record but not the substance and by his own hand has inserted a flaw in the foundation of his intellectual training that sooner or later must cause the whole superstructure to crash.

If any phrase can serve as a slogan of intellectual honesty, it is "know thyself." The beginning student in any subject is usually incapable of critically judging the true value of his accomplishment in a course. He must therefore rely on the more mature judgment of an experienced teacher. Hence the elementary courses demand teachers of longest experience and best judgment. Here the teacher often fails in his duty and does not give the student the benefit that is due him. This frequently is brought about by too high grading, due either to generosity in scoring or to tests that are so easy that they fail to differentiate the good, the indifferent and the poor students from one another. Every class of students has men of different capabilities, and final estimates should show a considerable range. The teacher who finally grades all his students very high is equally culpable with him who grades them all low.

The teacher must be critical if he expects the student to develop in himself the ability to differentiate between high and low grades of accomplishment and himself know when he is doing things well or poorly.

There is probably no more valuable exercise in training a student's appreciation of his own capability than taking properly set examinations; and when a teacher excuses a student from an examination he robs that student of the one exercise in the course that is of highest value to the student himself.

When, through judicial criticism by the teacher, the student has learned the elements of evaluating himself, then the student must, by argument and persuasion, be led to acknowledge his deficiencies and seek to repair them. He should be taught that acknowledged ignorance is not nearly as culpable as unacknowledged ignorance. He should be taught that to answer a question by the frank statement that he does not know is better policy than to bluff or conjecture, for the former attitude will lead the student to seek the knowledge and make his teacher eager to assist him to get it. These qualities may be developed in courses in any subject; but biologic subjects, especially in their laboratory phase, are fruitful in this respect if rightfully handled by instructors that are willing to answer questions, or, better yet, to suggest avenues by which the student may himself arrive at correct conclusions. The latter method is of course the only one to be used with the student who is intellectually indolent.

TRAINING IN OBSERVATION

Since both medicine and dentistry are largely applied biology, the members of these professions are especially in need of training in the biologic type of observation. This is a complex process, for it includes not only the

phenomenon observed but coincidentally a mental correlation of the structure and function, both normal and abnormal, and the continuity connected with the specific point at issue. It means that accompanying the observation one must think biologically and consecutively.

There is no type of undergraduate courses in which this facility can be developed except in those in the biologic sciences, and hence these courses stand out preeminent in the professional college training.

Biologic observation is quite different from the general type of observation. The student must learn to be discriminative, for he must be so in his profession, and the biologic courses give the best field for training in critical and discriminative observation. In physics can be taught accuracy through the reading of instruments, repeated to eliminate personal error and reduce range of probable error; but in this work there is little discrimination since the observation is, instead, intensive on some limited thing. In general and quantitative chemistry, reactions are pretty definite and usually isolated; and here, as also in quantitative chemistry, reactions can be repeated under conditions so nearly identical as to give almost conclusive evidence. Both physics and chemistry are excellent means of training in accuracy, but less fruitful in training in discrimination.

On the other hand, in biology, cells, tissues, organs and organisms are always variable, and, moreover, often an individual unit cannot be actually entirely dissociated from similar and surrounding units; hence observation must be extremely critical and discriminative if it is to approach the accuracy that is much more easily attainable in physics and chemistry.

The matter at issue must be dissociated from its surroundings by the mental processes of the student. The instructor cannot see with the eyes of the student and so must depend on individual quizzing in the laboratory, on discussion and on the graphic records of laboratory observations to ascertain just what visual and mental impressions have been received by the student. The quality of the graphic laboratory records is usually a good index of the quality of observation by the student.

Biologic observation is something more than looking at and seeing an object. It involves a mental process into which enters not only form and structure but also the correlation of these with function, relations to surrounding structures, a mental comparison with similar but not identical structures, and some conception of development and differentiation by which the observed conditions arose from simpler and more general preliminary relations.

This critical and discriminative type of observation is of the highest importance in medicine and dentistry. It is both an analytic and a synthetic faculty, and, next to intellectual honesty, with which it is intermingled, is absolutely essential to a high degree of professional efficiency. For its acquisition we must depend almost entirely on the training acquired in courses in the biologic sciences, either in the undergraduate college or professional school, or in both.

The product of the colleges, as it comes to the professional school, shows great deficiency in the quality of accurate, critical, discriminative observation. These students are satisfied with general impressions, which is almost a synonym for total ignorance. They proceed by a sort of intuitive process rather than by making an analytic attack. The result is that a large part of the effort in the earlier years of the professional school must be spent in initiating the student into proper observational procedure, and because of this much of the information so desirable for the use of the student in his clinical courses and in the practice of his profession cannot be presented to him.

Inquiries from students convince me that the deficiency in ability to observe critically and with discrimination is a result of the fact that most college courses in biology aim primarily at giving information rather than at mental and intellectual training. The wealth of material of the deepest interest, because of novelty and interrelationships, leads both student and teacher to be content with superficiality, to aspire to quantity rather than to quality.

The power of critical observation may be gained in any one of the variety of laboratory courses which are offered in biologic subjects; but that it should be gained in some of them is highly desirable. If a student comes to the professional school trained in this type of observation, no matter what phase of biology has served as a vehicle for this acquisition, the advantages of the professional course are much enhanced, and the carrying out of its especial responsibility of giving to the student that information which is to be directly used in his profession is greatly facilitated.

TRAINING IN POWER OF SOLVING PROBLEMS

The final one of the four capabilities I have selected as of prime importance in the practice of medicine and surgery is the ability to solve problems through orderly, sustained thinking. This ability can be inaugurated in the collegiate biologic courses, which offer many admirable opportunities, I can select only one or two. The training in this capability, if so inaugurated, can be much elaborated in the professional school.

In such a simple thing as identifying a bird or a flowering plant as to its genus and species, there is brought into operation the principle of differential eliminative diagnosis, which lies at the foundation of the practice of medicine and surgery. To identify a flowering plant, one is first compelled to select out characteristic factors from those common to a larger group. The fact that a flower has petals is not an index of whether a plant is monocotyledenous or dicotyledenous, but the number and arrangement of them are. So at every step the student must select from many the one determinative character. At every step he stands at the forking of two roads, and he must be enough alert each time to choose the correct fork in order to arrive at his destination. If he chooses the wrong fork he will soon find that the roadside markings are not familiar, and then must retrace his steps to the point at which he made his error. This is exactly what the practicing physician or dentist must do with every case that has not, through repetition, become thoroughly familiar.

In many phases of biologic study the student must learn to proceed in a methodical and orderly fashion through a seemingly intricate maze, going from the general to the differentiated, from the simple to the complex, if he is to reach a solution of the biologic problem presented to him, and this is exactly the habit of mind that is requisite in professional practice.

CONCLUSION

Much is said and written of the tremendous burden of the professional course; but if the student entered the professional school trained in intellectual honesty, in critical discriminative observation, with an introduction as to methods in solving biologic problems, and, added to these, a definite habit of effectual methods of

study, this burden would largely disappear, except for the mentally incompetent or the habitually indolent, neither of whom has any reason to aspire to a profession.

My thesis is that, since the training for a professional career is a continuous process, in which at least the undergraduate college must jointly and nearly equally share the responsibility with the professional school, in the college more attention should be given to training men in those capabilities requisite to professional life, a few of which I have discussed, and this is more important than imparting information. The information as a by-product, if courses of proper subject matter are selected, will be sufficient for the professional school to build on.

In inculcating these characteristics, the teacher in the undergraduate college has a distinct advantage over the teacher in the professional school. He gets the student two or three years earlier, when his mind is more mobile and his habits less firmly fixed, and he has a greater latitude in choice of courses and their content to serve as a vehicle for this training than is possible in the necessarily more rigid professional curriculum. Here is where undergraduate college teachers can best serve their time and generation through the agency of students destined for professional careers.

CONSECRATIO MEDICI *

HARVEY CUSHING, M.D.
BOSTON

There is an old saying that interest does not bind men together: interest separates men; there is only one thing that can effectively bind people, and that is a common devotion. This, a common devotion, more than any other possible influence, serves to overcome the self-depravities and conceits inherent in us which, uncontrolled, represent the chief defect in our natures. Our loyalties, to be sure—loyalty to nation, to a cause, to community, to school, to family, to friend—are somewhat akin, yet there may be something of personal interest, prejudice or defense in these particular reactions which makes them not wholly unselfish.

So let us believe, for our present purposes at least, that "devotion" not only implies a higher standard of self-effacement but still carries something of its quondam religious significance. And it is of the doctor's consecration to his task that I wish to speak, the kind of unselfish relation to suffering humanity that made St. Luke the beloved physician no more or less than it makes many another doctor of name unheard and unsung today.

It is this common devotion to their life's work that serves to bind those of the profession into which you are entering, with ties more close and enduring than those which hold any other group of people engaged in a common purpose. Nor should it make any difference where or how you may come to be engaged. The lives of countless Weelum MacLures, in the obscurity of their respective Drumtochtys, have been no less consecrated, could we but know them, than those of the Ambroise Parés, and Listers, and Pasteurs on whom the light of history has been turned.

Devotion is an attribute one cannot estimate and record by ordinary standards. How much the practicing doctor cares about his patients as individuals apart from their being the source of his livelihood; how much the medical scientist may be interested in promoting science rather than in securing his own promotion; how much the teacher influences his pupils to their best efforts, unmindful of what the curriculum briefly requires of him; how much the student engages in his work for the work's sake, regardless of his marks and rating—all these things depend on a devotion which places spiritual above material rewards.

This may sound, my young friends, like sermonizing. And valedictory addresses to medical students are prone to be commonplace, "platitudinous with the platitudes of a thousand pulpits," as Sterne said was true of most sermons. But there are certain things which concern the code of the doctor, handed down to us from ancient times, which though commonplace deserve reiteration on such occasions as this. They are things often lost sight of in these days when the Hippocratic Oath, as supposedly too antiquated for present-day purposes, is rarely read to graduating classes. I rejoice that Jefferson maintains this custom, for there is nothing, than this justly famous *credo*, that can better express the ideals which from the first have actuated the doctor and have led to the solidarity of the profession you are entering. No guild has a sounder code of ethics; no masonic group stronger ties of brotherhood.

For no insufficient reason do we as a profession hark back to the fifth century before the Christian Era when the man we venerate as the "Father of Medicine" first cast superstition aside, dissociated his calling from priestcraft, and based it on the principles of inductive philosophy. So, tempering them to our modern period, we may well hold fast to those hallowed rules of professional conduct which he promulgated and which have stood the test of usage as long as the canons of the Old Testament, which likewise in these fallen days are become somewhat unfashionable.

My reason for making professional devotion a text on your graduating day is to emphasize the doctor-and-patient relationship. However many of you may come to be diverted into other channels of professional activity, I take it that the school whose diploma you have gained still holds the practice of medicine as the primary object of your four years and more of training, and consequently that the prospective patient has from the first been kept in view even if distantly.

In these days when science is clearly in the saddle and when our knowledge of disease is consequently advancing at a breathless pace, we are apt to forget that not all can ride and that he also serves who waits and who applies what the horseman discovers. In some of our schools so great an emphasis has come to be laid on the science courses, with the patient long hidden from sight, that the better students, under the influence of teachers who have never had clinical experience, naturally come to feel that somehow the practice of medicine among the people is an inferior calling compared to the secluded life of an investigator, and that to justify themselves in the eyes of the faculty they must manage to "do a piece of research."

Indeed, when the students in some of these schools reach their clinical years their senior teachers are often men whose perspective is largely institutional, and consequently it has become, for lack of time, interest or experience, no one's business to give instruction in those aspects of medicine which will be so important to the greater number of you in the future: the relation of doctor to doctor, of doctor to patient and

* Commencement address at the Jefferson Medical College, Philadelphia, June 5, 1926.

patient's family, of doctor to community, and of our profession to the others, particularly to the priesthood from which medicine took its origin.

Dr. Thomas Percival thought these matters of sufficient importance to write a book about them for the benefit of his son on his entry into medicine; but for the most of you who have never heard of Percival and his code [1] they are left to be learned in the bitter school of personal experience; and many a promising career may come a cropper from misunderstandings of professional ethics the chief tenet of which, after all, is proper observance of the Golden Rule, not only in our relations to our patients and our professional brethren, but to society in general.

In our present day when so great emphasis is being laid on keeping people well by periodic health examinations and preventive medicine, all this about medical practice may sound very old-fashioned. But say what one will, the time inevitably comes to each and every one, now in the best of health, when he will needs cry out for some experienced and sensible doctor who can alleviate if not cure his particular ailments, be they physical or mental; and the kind of sagacity and resourcefulness he will expect and need is less laboratory-born than bred of long and sympathetic familiarity with the anxieties and complaints of ailing, damaged and worn-out human beings. These things were perhaps best learned in the days of student apprenticships, and our efforts to recall something of the old-time elbow-to-elbow familiarity of teacher and pupil under the guise of a tutorial arrangement shows a growing appreciation of the advantages of a long-abandoned system.

We have gained much for science but have lost much for practice by the course we are following, and I look forward to a time when the pendulum will swing back, not to a day when the spirit of research will be any less active, but to a day when suitable representatives of the clinical departments will be delegated to correlate the teaching in the science courses so that their bearing on what is to come may be constantly kept in mind. A course in pure science unrelated to the patient belongs rather in the college than in the medical school.

It is a common complaint that, in their exercises, clinical teachers fail to draw the lessons they should from the laboratory courses. It is doubtless true that they lag in their familiarity with and the adaptation of the newest disclosures of science; and it is perhaps a lame excuse that science as yet has no obvious bearing on the greater portion of the doctor's daily problems. But in rejoinder the clinician might well ask whether it could possibly harm a teacher of the preclinical sciences to have served a house-officership; or dampen his investigative ardor should he even spend an occasional hour or two in contact with patients in the wards or ambulatory clinic.

Both parties to this mild family disagreement among the faculty must endeavor to see the matter clearly and without prejudice. Through the concentrated application of the scientific method in the fifty years past, medical progress has been nigh incredible. We must therefore make every effort to support and encourage the scientific spirit, for who can foretell what prodigious strides may be taken in another half-century? But the capacity for productive research is a rare quality akin to genius, and the future investigator among you will doubtless be found, or find himself, irrespective of this or that curricular arrangement. Whether it is necessary or worth while for the majority, who are destined to put to practical purposes the knowledge gained from the laboratory, to be given such an exclusive preliminary science drill as they are now given in many schools, is a matter of doubt, and a happy solution of this puzzling question will some day perhaps be reached.

You who are graduating here today, wherever you land—in laboratory, in hospital clinic, in practice—will have occasion to lament the insufficiencies of your preparation. This has been so from the beginning and will be so to the end of time. However secure the foundation may appear to have been laid, you will come to build on it an individual kind of superstructure which could not possibly have been anticipated. "Could I only have had a better grounding in biophysics instead of wasting my time in the clinic!" groans the young laboratory worker who endeavors to solve some baffling problem. "Could I only have had a little more dissection I would not have mistaken a median nerve for a tendon when I sewed up that cut wrist!" groans the youthful surgeon. "Had I only learned to puncture a bulging ear-drum instead of electing that useless laboratory course I might have saved this poor child from a meningitis!" groans the young practitioner. "If we could only have foreseen this, that or the other, we would not have spent our time as we did," we groan in unison.

From vain regrets Good Lord deliver us. Experience has to teach us many things we have never learned from the schools. You will remember Paré's account of an episode in the little hamlet of Suze some time in 1537. "See how I learned to treat wounds made by gunshot: not out of books."

Most of you, I take it, will—as Jefferson graduates have done before—come to recruit the ranks of the practicing doctor in this great state. Personally I have been too much astride the fence to take sides strongly in regard to the relative satisfactions of a life so devoted, or to one dedicated to teaching and investigation. With a background of family practitioners, I have, by the fall of the dice, come to lead a life different from theirs, not so sequestered as that of some, but sufficiently so to let me estimate the recompenses and weigh the satisfactions which come from an existence of the two kinds. Certainly the self-sacrificing career of the practicing physician, respected and beloved of his community, is no less, perhaps even more, character-making and ennobling than the secluded life of a pure laboratory worker whatever be the importance of his researches and discoveries. In either case, "success dwells in the silences though fame be in the song."

We live in an era of specialization, but specialization can be overdone and there is no inherent reason why the qualities of investigator, teacher and practitioner should not go hand-in-hand, be represented in a single individual, and he be none the worse for the mixture. So it was, for example, in the case of the incomparable Hunter; so it was, to come nearer home, in the case of two of the great peripatetic teachers, Nathan R. Smith and Daniel Drake, who were associated with the birth of this school of whose diploma you may be justly proud.

And should you in your "waiting time," when patients seem few and your outlook uncertain, wish to gain courage and receive stimulus, read the lives of

1. The basis of the code of ethics generally adhered to by English-speaking doctors was formulated in 1803 by Percival, who, besides being a practicing physician in Manchester, England, was a mathematician and a natural philosopher, one of the first biometricians, one of the first to urge the isolation of contagious diseases, one of the first to emphasize public sanitation and the importance of what we now call industrial medicine.

these men and learn what perseverance may accomplish. Contrast your opportunities and training with those of Drake, brought up in a log cabin at May's Lick over the mountains in what was then the wilderness of Transylvania; and who in the midst of teaching, of founding medical schools, of practice, came to be recognized as the leading climatologist and epidemiologist of his day. All this you will find in the volumes of medical biography, which deserve a place on your library shelves alongside your journals and textbooks.

> Excellent courage our fathers bore—
> Excellent heart had our fathers of old;
> None too learned, but nobly bold
> Into the fight went our fathers of old.

But even better than this, stouten your hearts by reading of the doctor in fiction, and emulate Lidgate, at least up to the point which will warn you against marrying the wrong woman. Familiarize yourselves with the writings of healthy-minded doctors like Oliver Wendell Holmes and John Brown of "Rab and His Friends." If you need an antidote for the cynicism of "Arrowsmith," buy or borrow Sarah Orne Jewett's nigh-forgotten story depicting her own father as "A Country Doctor"; for there are still John Leslies in the country districts and room for many more—plenty of room, too, for Nan; and if she is really serious about it she's worth to the world a thousand Leoras. Perhaps best of all, if you would learn what unalloyed professional devotion may be and what rewards it may bring, read or reread the last chapters of Ian McLaren's "Beside the Bonnie Briar Bush" and let the example of Weelum MacLure, to whom I have already alluded, become a part of you.

Still, you need not resort to biography or fiction to learn something of the spirit of devotion that is the mainspring of our profession. You have plenty of examples, living and dead, here in your own school. Being a surgeon, and more familiar with Jefferson's century-long story of surgery than with her story of physic, let us look there for illustrations, the more fittingly since a talented and enterprising surgeon was your founder; and it took no less a person than a fighting McClellan to succeed in such a venture under the very shadow of, and with no little opposition from, the oldest and most celebrated school in the country, his own alma mater. She it was who provided his successor in the chair of surgery on the reorganization of your school in 1841; and the name of Thomas Dent Mütter, who, alas, from overwork died all too young, is held in thankful remembrance through the museum he founded and the lectureship he established—a lectureship which has been of help to many young men, as I can testify, who had the privilege of holding it just twenty-five years ago.

On Mütter's enforced retirement in 1856, the school for the first time reached out for an example of its own product, and chose a man who had graduated with its second class and who, meanwhile, had gathered as a teacher experience almost as rich and varied as that of Daniel Drake himself, under whose influence he had come in Cincinnati. Young men in those days were less fearful of transplantation than we, and the twenty-eight years during which Samuel David Gross subsequently served here in his fourth chair of surgery saw him rise to the top of his profession. We may well believe that the increasing flood of students who during those years went out into the world as Jefferson graduates were deeply influenced by his scholarly example and teaching.

But if the elder Gross and his contemporaries may seem somewhat shadowy figures to you, the mantle he wore as doyen of American surgery has now for long rested on the shoulders of his successor, a man endowed with perennial youth, who seems likely to hold that emeritus position among us for time untold. And as Dr. Keen's spirit dominates time, so the unquenchable spirit of your beloved teacher, "Jack" Da Costa, dominates a disability which would long since have driven a lesser man to retirement and inactivity. It is, furthermore, this same spirit of "never give in" that keeps the star of a frail gentleman shining brilliantly in a galaxy of Philadelphia surgeons, a man whose personal dexterity enables him to save more lives, and those the precious lives of children, each day, week and month, than may be given to others to save in a year or in a lifetime. If the Recording Angel keeps score of the numbers any one of us as individuals may possibly have snatched from the very jaws of death, certainly Chevalier Jackson's name tops the list.

Favored is the school that may carry the tradition of men who have shown such professional devotion as these, and whose spirit has conquered time, age, ill health and circumstances. A wise doctor who knew his patients well once said that in his experience the best work in the world was often done by people suffering from some bodily affliction; and this is a heartening idea you may well pass on in your turn to some of those who may in future years consult you and for whom you may have little to give but encouragement and comfort. You indeed will have to mix many of your prescriptions with a basis of hope, and too little stress is laid in most courses in therapeutics on the beneficial effect of optimism and cheer in combating disease.

We are tending to become a standardized country, and it is perhaps on standardization that industrial progress is founded. But standardization of our educational systems is apt to stamp out individualism and defeat the very ends of education by leveling the product down rather than up. The more really important qualities of people are quite beyond pigeonholing, quite beyond measurement by scales, tape or mental tests, quite beyond rating by any known system of examination, all of which fail in giving us an estimate of that most essential of all qualities, personality.

The capacity of the man himself is only revealed when, under stress and responsibility, he breaks through his educational shell and he may then be a splendid surprise to himself no less than to his teachers. There is no profession in which such surprises are more likely to happen than in ours, no profession which offers greater opportunities for the development of character, provided you will consecrate your lives unselfishly to your tasks as others you would wish to emulate have done before you. In so doing you will meet responsibilities as they come, with intelligence and courage; you will play fair with your fellow men remembering that the practical religion of the physician is not the promising of bliss in the future but the giving of health and happiness on earth; and above all, you will hold fast to that noble phrase of Hippocrates: "Where there is love of humanity there will be love of the profession."

I am going to read to you, in closing, a paragraph from a book which I can warmly recommend for its philosophy and humor. You will observe from its title that I may have had it in mind in choosing the text of this, in comparison, most feeble address. It is Stephen Paget's "Confessio Medici." He says therein:

Every year, young men enter the medical profession who neither are born doctors, nor have any great love of science, nor are helped by name or influence. Without a welcome, without money, without prospects, they fight their way into practice, and in practice; they find it hard work, ill-thanked, ill-paid; there are times when they say, 'What call had I to be a doctor? I should have done better for myself and my wife and the children in some other calling.' But they stick to it, and that not only from necessity, but from pride, honor, conviction; and Heaven, sooner or later, lets them know what it thinks of them. The information comes quite as a surprise to them, being the first received from any source, that they were indeed called to be doctors; and they hesitate to give the name of divine vocation to work paid by the job, and shamefully underpaid at that. Calls, they imagine, should master men, beating down on them: surely a diploma, obtained by hard examination and hard cash, and signed and sealed by earthly examiners, cannot be a summons from heaven. But it may be. For, if a doctor's life may not be a divine vocation, then no life is a vocation, and nothing is divine.

THE CLINICAL CLERKSHIP IN MEDICINE

DETAILS OF A METHOD OF INSTRUCTION *

EUGENE F. DU BOIS, M.D.
AND
PAUL REZNIKOFF, M.D.
NEW YORK

The problems of medical instruction are the same as those of education in general, modified only by the nature of the subject. The aim of all intelligent pedagogy is to teach the student to teach himself. In order that this may be done effectively, he must be taught to think independently and be inspired to continue to study and enjoy his work after the immediate contact with the school has ended.

The difficulties that stand in the way of the realization of this goal are many. Most students are poorly prepared for such a method of instruction, and better immediate results are obtained with weak material by "spoon feeding." Such an objection, of course, is merely an explanation for shirking duty. Material must be accepted as it comes and developed without wasting time on complaints. Predigested instruction is like spoon feeding a child for fear of having him spill some of the food. He would have to be fed for the rest of his life. A still greater difficulty, especially in medicine, is the necessity of teaching a tremendous number of facts. The need for economy of time urges one to tell the student what he is trying to find out rather than permit him to grope in the maze. This is a shortsighted attitude. If the student is followed through several years, his retention of the facts he has learned is surprisingly poor. This is no great cause for worry. If he has once learned the method of digging the facts out for himself, he will at least have learned how to get at them again. The dictum never to sacrifice method for facts is probably the soundest pedagogy. There is no danger of not learning sufficient facts under a system of self-instructing education. The danger is rather that too many facts, which often are not facts, overwhelm the student who has only a normal mental digestive capacity.

An attempt is being made to apply these principles to the clinical clerkship in medicine. In American medical schools, the clerkships are usually reserved for the final year. By this time, the student has almost completed his period of systematic training and is about to become his own instructor. This transition is important and justifies a description of the general principles and, more particularly, of the details of the course during which the change is taking place.

* From the Second (Cornell) Medical Division of Bellevue Hospital.

CLINICAL CLERKSHIP IN BELLEVUE HOSPITAL

We are discussing here specifically the month spent by the students in the Second (Cornell) Medical Division of Bellevue Hospital. This forms a small portion of the course in medicine and only one half of the total period of medical clerkship. Our students spend another month in the medical wards of New York Hospital under the direct instruction of the head of the department of medicine, Dr. Lewis A. Conner, and his associate, Dr. Nellis B. Foster. The students have already received the usual training in medicine during the second and third years, and they are supposed to be familiar with the methods of physical diagnosis and clinical pathology. In the clerkship at New York Hospital, particular attention is paid to thorough physical diagnosis, the one most important feature of clinical medicine, and the professor of medicine has so planned the whole course that we at Bellevue are expected to emphasize other aspects of the subject.

Bellevue Hospital furnishes excellent clinical material. The Cornell medical division controls three wards of from twenty-five to thirty beds each, and there are about 2,800 admissions to these three wards during the year. There is more than enough material for each section of ten or eleven clinical clerks, and only the most instructive cases are assigned to the students. Each man studies in detail from ten to fifteen patients. This does not seem like a large amount of work for a man's entire time during a whole month, but each student is also given the opportunity of seeing all the more important activities of the division.

PREPARATION OF CHART

On the morning that the clerks first arrive, the director of the division takes them to the hospital office, where they register as official members of the house staff with certain duties and responsibilities. This formality is important, since it puts the clerk in a better frame of mind to work under the interns and gives him a better sense of his duties in taking the official histories and recording his laboratory work on the charts. When the students have registered, they are given complete sets of the instructions to be found at the end of this article, and the director then spends about an hour in explaining the general principles as well as the details of the work.

First, the question of the charts is discussed. Each student is required to submit at the end of the month ten complete charts. Each is prepared as follows:

1. A complete and detailed history is obtained by the student, who follows in the first two or three cases an outline of history taking based on the form used by the Johns Hopkins University Medical Department. After the student is thoroughly familiar with this form, he is allowed to omit the unimportant negative findings.

2. The form of the physical examination also follows the one used at Johns Hopkins. Particular attention is paid to the general appearance of the patient, and the clerks are instructed to make this so specific that a stranger could identify the patient in a large ward.

3. The first charts are reviewed in detail by an instructor, and the logic of the questions asked the patient and the sequence of the examination are dis-

cussed with the student. Immediately after the physical examination, a tentative diagnosis is written before the hospital chart has been consulted or before the laboratory reports have been received. We do this not in the spirit of giving the students an examination, since we attach little weight to the correctness of the tentative diagnosis. We insist on it in order to make them crystallize their thoughts. The tentative diagnosis may be changed in subsequent notes as often as is necessary. It is hard for an experienced clinician, and particularly hard for a student, to commit himself to a diagnosis in black and white, but there is no living teacher so instructive or so emphatic as the same written words triumphant or abashed in the presence of a necropsy.

4. Next, the clerk examines the official hospital chart and summarizes all the previous findings, paying particular attention to the various therapeutic measures and their effects. If necessary, the temperature chart is copied.

5. The students are expected to perform in all cases the essential routine tests: urine examinations, blood pressure measurements, hemoglobin determinations, leukocyte counts and an examination of the blood smear. All other laboratory procedures are to be done on the student's own initiative as dictated by his curiosity and desire for information.

6. Progress notes must be made at frequent intervals covering the nurses' record as well as the changes in physical signs, medication and diet. The chart should be kept up to date, so that it will give at any time a complete picture of the case.

The notes must also contain an outline of the therapeutic measures indicated, with the necessary prescriptions written in such form that they can be handed to a druggist. This particular requirement seems to cause much anguish among the students. Like their elders, they hate to write detailed prescriptions but much prefer general vague outlines of methods of treatment.

DIVISION OF TIME

The clinical clerks report for work and sign a book in the laboratory at 9 o'clock every morning. They are supposed to finish at about 5 o'clock, but usually work later either in the wards on in the library. Ward work occupies the time until 11:30 in the morning. Then while the patients are taking lunch, the clerks go to the ward laboratory and make their blood counts and other tests. During this hour, conferences may be held dealing with such subjects as coma, edema and methods of medication. Mondays, Wednesdays and Fridays, the clerks either make formal ward rounds with two part-time clinical professors, Dr. Walter L. Niles, the dean, and Dr. Malcolm Goodridge, or else attend in another part of Bellevue Hospital a tuberculosis clinic given by Dr. James Alexander Miller to his clinical clerks of the College of Physicians and Surgeons. Our students greatly appreciate this hospitality extended to them by Columbia University, and it is believed that this example of cooperation between two universities is an important part of their instruction.

The charts, ward work and rounds described above are similar to those used in teaching clinical clerks throughout this country. We can now devote our attention to three features that are not universally employed. They have been introduced in accordance with the general principle that the students should learn to teach themselves during the remainder of their lives and that they should follow in general the methods of self-instruction that have been adopted by their teachers.

CASUALTY CONFERENCE AND PAPERS

Perhaps the most important of all is the casualty conference held every Tuesday afternoon. This is conducted by the director of the service, who thus checks the diagnoses and treatment of every patient who has been the subject of an operation or necropsy during the preceding week. The house physician reads a summary of each case. The students, if they have not seen or heard about the necropsy, are then asked for their diagnoses. Next, the members of the staff who have not seen the patient are asked to make diagnoses from the description given by the house physician. After that, the diagnoses made on admission and throughout the patient's stay in the hospital are read from the chart. Finally, the pathologic intern reads the necropsy findings and shows the organs. In checking up the diagnosis, it is often found that the most accurate estimate has been made by the house officer or the clinical clerk. The students are impressed with the great chances for error in diagnosis that may occur even when patients have been carefully studied by experienced clinicians. They see that their instructors are willing and eager to go on record in public in order that each may benefit by his mistakes. No clinician's reputation for infallibility lasts through more than three conferences, but his reputation for honesty waxes as the other wanes. Every effort is made to wean the student from the pernicious idea that a diagnosis must be correct because one of his professors has given it the weight of his authority.

At this conference, there is also a good opportunity of checking the results of operations and the interpretation of roentgen-ray films. An effort is made to show the clerks the necessity for reading their own roentgenograms and not becoming dependent on the diagnosis of the roentgenologist.

One of the aims of the clerkship is to develop not only safe physicians but also intelligent and cultured students. Therefore the clerk is impressed with the fact that a careful history, a complete examination, both physical and laboratory, a logical diagnosis, and adequate therapy are only the mere essentials. To be more than a good technician, he must now begin to wonder. As the "why" of his findings take form in his mind, he should inquire into the literature, interview authorities and, if possible, investigate for himself. In order to start the student on this road, each clinical clerk is expected to hand in one case report every week except the first. The subjects for these papers are selected by the men themselves, but they are urged to pick out something connected specifically with one of their patients yet based on one of the fundamental preclinical sciences. Having selected titles of the papers, they search for information in the library, using the various indexes, consulting original sources and avoiding, according to our specific instructions, all predigested material found in textbooks or systems of medicine. A dozen or so original articles are then reviewed, and a paper of five or ten pages is written with a short bibliography attached.

Each one of these papers is then read by one of us, and a good deal of time is spent discussing with the students the material and manner of presentation. We tell them that, since the reading of their papers takes time that we would otherwise devote to reading the original literature, we expect to receive this information from their papers. We say that if they cannot bring us the information we need, they have failed in the main purpose of the paper. We do not want the kind

of material contained in textbooks with which we are familiar, but desire a summary of the important recent work on this particular subject. We emphasize the fact that a statement is of no value to us unless we know the authority and evidence on which the statement is based. An effort is made to teach the clerks how to distinguish between reliable and unreliable work, and we tell them that the librarian is instructed to help them find not only work that is good but also work that is bad. The responsibility is the clerk's to distinguish between the two.

The average quality of these papers is surprisingly high, in view of the inexperience of the students and the brief time allowed them. Sometimes they make the mistake of trying to cover too much ground; occasionally, they give a rehash of well known facts; usually, however, they bring us what we want in a well prepared, interesting form with a surprising sense of values regarding the relative importance of certain facts. One gets the impression that their sense of values is on the whole fresher and keener than it is in the case of their elders. For all these reasons, it is a pleasure rather than a task to read their papers with them, and there is no better opportunity of encouraging the student in the habit of searching for knowledge and expressing himself clearly.

This particular method of instruction was learned from the students themselves. About ten years ago, some of the men of Cornell University Medical College organized a journal club called the Vesalian Society and presented papers at their monthly meetings. We as faculty advisers attended these meetings and were impressed by the fact that the students were learning more by themselves than they learned in school. We therefore borrowed their method of instruction and added to it the students' clinic, which is merely a development of the journal club idea.

STUDENTS' CLINIC

This clinic, the third method of self instruction, is held every Thursday afternoon and it lasts an hour and a half, which is about time enough to present four cases. It takes the place of grand rounds, that unwieldy method of instruction usually designated as "shifting dulness." It is much more comfortable and easier on the feet to have the patients wheeled into the clinic room.

Each clerk is allowed eight minutes for the presentation of his case. This means that he must eliminate all unimportant and negative data and select from the mass of material those things which are essential. The director of the service presides at the first three of these clinics and, unless the man is presenting material that is unusually interesting, holds him strictly to the eight minutes. The students are surprised and resentful when time is called, resembling their elders in these respects, but they are reminded of the well known fact that the pest of modern medicine is the man who exceeds the time allotted for his paper. After two clinics they realize this fact, and it is impressed on them by the clerk who is last on the program and therefore in danger of being crowded off the platform. Actually, the program is most often delayed by the instructors, who take great pleasure in discussing the cases at these clinics.

We have said that the first three clinics of the month are conducted by the director of the service. The last clinic is turned over entirely to the students, who select a chairman, arrange a program, present the cases and conduct the discussions, inviting any one they choose in the city to participate. These are by all odds the best of the clinics. No time is wasted; no one attempts to talk for more than a few seconds after he has received a warning signal from the student chairman. In the preparation of the discussions, there has been not only a search of the recent literature, but also many interviews with the heads of the preclinical departments, which deal with the principles involved. We have taken a certain pleasure in telling the clerks that it is a part of the regular college work of each professor to talk over with fourth year students the fundamental principles involved in the study of his cases in the clinic. Men engaged in research are usually only too glad to attend these student clinics and to add to the discussion. The same research men, as a rule, try to get out of any such affair when asked by their clinical colleagues.

At the end of the month an experience conference is held, and the clerks are asked to criticize the course and suggest improvements. Many of the ideas presented at these conferences have proved very helpful and have been incorporated into the course. This meeting also serves as a clearing house for ideas on education and hospital internships, and has a distinct value in promoting better understanding between the instructors and the students.

COMMENT

The plan that has been outlined deals only with the mechanics of instruction. By far the most important element in teaching is its spirit. In a previous article by one of us,[1] the general conception of medical education and the factors that are necessary to make any plan work were discussed. Here only a few points need be emphasized. Students learn best by example. This applies to their attitude toward patients, to punctuality and to mental honesty. Therefore, an instructor must work. He must plan and arrange schedules long in advance of the exercise; he must be prompt in his attendance, and must try to come into close personal contact with his students. Unless he has a real affection for these future physicians and has faith in their characters and minds, effectual work is impossible. The students recognize slipshod instruction readily. To teach by "skilful neglect" is a paradox, because if it is skilful it is not neglect but hard work. To make a plan such as this effectual, two other conditions must be realized.

Whenever possible a student should be asked, not told. Certainly he must be given an opportunity to think before he is required to remember. Most important of all, the correct result should never be stressed. Such a policy leads those inclined that way to intellectual dishonesty. Improvement is the important goal, and errors should be welcomed if they offer a basis for development.

This plan of clinical instruction in the fourth year is submitted because it illustrates a method of putting into effect our conception of instruction: The purpose of instruction is to teach the students to teach themselves; the manner of instruction is by example and work; the spirit of instruction is sympathy for and faith in the student.

1. Du Bois, E. F.: On Certain Courses Not Listed in the Medical Curriculum, Science 59: 53-56 (Jan. 18) 1924.

Below are given the printed directions that are handed to the students:

RULES FOR CLINICAL CLERKS

1. Clinical clerks' charts, except when in use, should be attached to the bed near the hospital charts.

2. When a case is assigned, take the history at once and write it on a hospital history sheet and attach it to the hospital chart. As soon as a member of the visiting or house staff gives it his written O. K., it will become part of the hospital records. . . . If you are assigned a case in which a history has already been recorded, make a history of your own and attach to your chart. Take a blood pressure reading after taking history and record it on the temperature sheet.

3. Next make a complete physical examination and record it on your chart at once. Use stamps to record chest findings. Write your provisional diagnosis immediately after the physical examination is performed.

4. Laboratory work should be recorded on the hospital temperature sheet or continuation sheet immediately as well as on your own chart. When you need specimens, request the house physician or junior to write the necessary orders in the book. The reaction of the urine is determined by the indicators provided for the purpose (methyl red and phenol red). In doing a differential count at least 200 cells must be counted, and every type of cell must be included in your classification.

5. Follow-up notes must be written on every case as often as indicated—daily in acute cases, at least twice a week in all cases. These should include notes on patient's condition, previous night's rest, temperature, pulse and respiration, change in physical signs, medication, diet, fluids, therapy, etc. Check up your notes with those on the nurse's sheet (blue sheet).

6. Prescribe medication and diet for each case and change prescription as indications arise. Make your own prescriptions complete and detailed—include dosage vehicle, etc., just as though your patient were to receive it in your office.

7. Ten complete cases (including discharge or summary notes) must be handed in before the service of each clinical clerk is completed.

8. Attendance at postmortem examinations of patients seen by students takes precedence over all other work except ward emergencies.

REPORTS OF CASES BY CLINICAL CLERKS

Each clinical clerk is expected to hand in one case report at 9 a. m. every Wednesday except the first. These are to be written or typewritten, if possible, on the regulation paper and should be contained in the regular folders. By means of the work involved in preparing these case reports, we are trying to teach the following:

1. A more careful study of the patient.
2. A more careful consideration of the differential diagnosis.
3. A better selection of important or interesting features of the case.
4. A better acquaintance with library methods and the means of obtaining medical information.
5. A critical study of original sources of information with an ability to discriminate between the good and the bad.
6. A facility in expressing facts in a concise, interesting and convincing manner.

In other words, we are trying to teach the students how to teach themselves for the rest of their lives.

The case reports should be constructed as follows:

1. Student's name.

2. Patient's name; age; sex; date of admission and discharge; diagnosis.

3. Summary of history, physical examination and course. Since these have already been given at length on the ward charts, this summary should be brief (one-fourth page is sufficient).

4. Discussion of diagnosis or of some interesting feature of the case. Try to make your report a correlation between the clinical aspects and one of the fundamental sciences. Each important statement should be substantiated by the name of the author responsible. References should be numbered.

5. Bibliography giving for each article quoted:

   1. Name of author.
   2. Title of article.
   3. Name of journal (standard abbreviations).
   4. Year.
   5. Volume.
   6. Page.

For books, give author, title, edition, city, publisher, year and page.

Students are not expected to repeat in these papers material that can be found in textbooks or the systems of medicine. They should go to the original sources and show the facts on which writers of textbooks or systems base their statements.

Instructors commenting on these papers are requested to note especially:

1. Ability in selecting the important phase of the subject.
2. Ability in selecting good original articles.
3. Ability in selecting the important points in good articles.
4. Ability to criticize an article.
5. Ability in expressing thoughts clearly and concisely.
6. Ability to make the reading apply to the case in hand.
7. Originality in thought.

TOPICS OF REPRESENTATIVE PAPERS SUBMITTED BY CLINICAL CLERKS[2]

Chills and fever.
Bilirubin in the blood serum in cardiac disease.
Cause of pain in gastric and duodenal ulcers.
Prognosis in diabetes mellitus.
A consideration of factors which determine prognosis in acute lobar pneumonia.
Pigment metabolism.
Significance and mechanism of heart pain.
Mechanism of orthopnea.
Pleuritis: (*a*) relation to tuberculosis; (*b*) pathogenesis.
Tuberculosis versus "gassed" lung.
Sympathectomy in angina pectoris.
Reasons for negative blood culture in subacute bacterial endocarditis.
Cause of crisis in pneumonia.
Edema in cardiac decompensation.
Capillary pulsation.
Leukocyte count in acute lobar pneumonia.
Cause of anemia in malignancy.
Discussion of cyanosis in emphysema.
Certain aspects of acidosis in nephritis.
Pathologic physiology of pulmonary emphysema.
The guanidine theory of hypertension.
Pharmacology of quinidine.
Antibody formation in tuberculosis.
Dynamics and diagnosis of mitral stenosis.
Pain in lobar pneumonia.
Differential diagnosis of supradiaphragmatic and infradiaphragmatic conditions.
Factors in the toxemia of pneumonia.
Pathologic physiology of aortitis.
Blood transfusions.
Consideration of vital capacity of the lungs.
A conception of pulmonary transudation.
Dyspnea with particular reference to cardiac conditions.
Water and fever.
Hiccup—etiology, relation to epidemic encephalitis and its treatment.
Genesis and mechanism of auricular fibrillation.
Sippy treatment and its physiologic rationale.
Cause of thrombus formation.
Pathologic physiology of ascites.
A consideration of jaundice.
Kidney function.

2. These papers are kept on file in the college library.

THE STANDARDIZED HOSPITAL AS A TRAINING SCHOOL FOR BETTER PHYSICIANS AND NURSES*

N. P. COLWELL, M.D.
Secretary, Council on Medical Education and Hospitals of the American Medical Association
CHICAGO

By a "standardized" hospital is meant one in which the grounds, buildings, equipment, methods and personnel are developed up to or beyond the requirements of a standard or schedule of requirements fixed by some standardizing agency. The remarkable fact has been the prompt recognition by hospital superintendents, staff and other personnel of the needs for hospital improvement and the ready acquiescence to the suggestions made by the several standardizing agencies. Rather than a drafted army, which, to escape a penalty, follows a flag or standard, the hospitals are more fittingly referred to as an army of enthusiastic volunteer workers who, after all, in all worthwhile work, are those who accomplish the most.

THE STIMULUS FOR IMPROVEMENT

The improvement in hospitals, as in medical schools, has been a natural result of the tremendous increase in medical knowledge during the last fifty years. The activities of Pasteur gave an impetus to medical research which resulted in fixing the germ origin of many common diseases of mankind, and stopped for all time the frightful epidemics which with grim regularity exacted an appalling tribute in suffering and death. As a result of these discoveries and the wider research which they stimulated, more exact knowledge regarding the causes, treatment and cure of diseases has been obtained during the last fifty years than in all previous time. In consequence, the fields of medical teaching and medical practice have been enormously expanded, resulting naturally in the great improvements which have been brought about in medical schools and hospitals.

HOSPITALS INDISPENSABLE IN MEDICAL EDUCATION AND PRACTICE

In 1900, before the recent reorganization of medical schools was begun, only a small proportion had a sufficiently close relationship with hospitals to permit of even moderately efficient clinical teaching. Medical schools up to that time were mostly undeveloped and crudely conducted institutions, as compared with our modern high standard medical teaching plants. So also, hospitals since that time have been greatly improved in quality and increased in quantity. It was apparent that for the medical school a well equipped teaching hospital was indispensable. It has since become increasingly apparent, also, that the medical school or some other arrangement for medical instruction is highly essential for the hospital. There is a high degree of interdependence, therefore, in the improvement of medical education and hospitals.

It is in its capacity as a part of a university medical school, indeed, that a hospital has the opportunity of fulfilling to the highest degree its educational function. It not only conducts a training for medical students, physicians and nurses, but also through research adds its quota to the knowledge of medicine. Each of the hospital's functions is best fulfilled only if its other functions are equally well performed.

With the greatly broadened education furnished to physicians, the methods of practice have also become more highly technical and complex. Physicians have been forced to limit their practice within narrower bounds in order to attain a higher degree of skill in their various specialties, and in this connection the hospital has become of greater importance in the present day practice of medicine. Patients coming to the hospital benefit from the higher skill of the organized staff of specialists, and in the hospital, on the other hand, the staff member can more easily limit his practice within the lines of his specialty.

The modern practice of medicine requires also the use of highly technical scientific apparatus, which is too elaborate and expensive for the individual physician to possess but which naturally becomes a part of the equipment of every standardized hospital. For this reason, therefore, the physician is seriously handicapped who does not have ready access to a hospital. The average patient, also, can receive more prompt and efficient care in a hospital, especially in emergency cases, because of the accessibility, not only of well qualified physicians and nurses, but also of all needed instruments, operating rooms and laboratories. The hospital, therefore, is highly essential in the present day practice of medicine.

EDUCATIONAL FUNCTION OF THE HOSPITAL

Through its educational function, the standardized hospital becomes in every way a more active, alert and progressive institution. In the training of nurses and medical students, an atmosphere of investigation is created among the attending staff. Regular conferences are held regarding patients having unusual complicated diseases or regarding unusual causes of death, which are attended by students, interns and staff. This atmosphere of education and investigation stimulates the provision in the hospital of other helpful agencies for carrying out therapeutic and investigative measures, such as social service workers and district nurses. When the hospital is not a teaching hospital of a medical school, it will be free to encourage the physicians of its community to attend either its special conferences or courses of advanced medical instruction, or to invite the local medical society to hold its regular meetings in the hospital amphitheater, where on occasion patients can be used to demonstrate the application and efficiency of some improved method of diagnosis or treatment. This educational function may be further extended by instruction in regard to health preservation and sanitation for the patients who come to the hospital for treatment; and, through the visiting nurses and social service workers, the community can be informed regarding the value of modern scientific medical care.

It can be seen, therefore, that the standardized hospital can exert a tremendous increase for good, especially if it requires a high standard of both moral and professional qualifications for its staff members. As a model human being is one who is equally well developed in his physical, intellectual and moral make-up, so the best hospital depends to an equal extent on the excellence of its physical plant, the high intellectual qualifications of its personnel, and the moral atmosphere maintained throughout the institution. The most vital part, or principle, of every hospital, however, is the high standard of professional and moral qualifications which must be possessed by its staff of physicians and nurses. Lessen or destroy this primary or vital element, and the hospital to an equal extent ceases to serve humanity.

* Read before the Catholic Hospital Association at Chicago, June 17, 1926.

HOSPITAL SERVICE AT ITS HIGHEST POINT

The greatest service to humanity during sickness or injury is the goal toward which hospitals have been striving; and their efforts have not been in vain. At no previous time have hospitals reached so high a standard of efficiency in public service as now. But the fight has just begun. A high standard of professional qualifications has, indeed, been established in our better hospitals, but that high standard must be maintained.

DESTRUCTIVE INFLUENCES AT WORK

Every progressive movement is sure to meet with opposition. The increases in medical knowledge have been so great and the essential changes in medical education and practice so rapid that the people generally have not become informed in regard to them. Along with the many reliable and scientific facts demonstrable that have been developed in the last twenty years, there have been also numerous grossly exaggerated, purposely misleading or entirely false schemes heralded by ignorant, self-seeking, or mercenary individuals who seek to profit through the needs of people who are sick or in distress. Along with the higher grade medical schools with their modern scientific methods of diagnosing and treating diseases, there have appeared also certain "schools," or groups of healers foisting on the public certain unproved theories or certain methods of treatment as panaceas for all diseases that afflict mankind. Through the efforts of the medical profession to keep its own house in order, quacks, fakers and diploma-mills have been mostly eliminated from its ranks. Certain other groups of practitioners, however, have coined certain high sounding names to designate massage, manual manipulations or some other form of treatment, and because of such limitations claim that they "are not practicing medicine" and, therefore, are not subject to the high educational and professional qualifications that physicians are required to possess. Nevertheless, they attempt to treat sick and injured persons and, by so doing, assume the physician's responsibilities.

CONFUSION FROM VARYING STANDARDS

So plausible do their arguments sound to those unfamiliar with the dangers of unqualified practice that, in some states, lay and credulous members of state legislatures have been persuaded to grant them authority to treat the sick. Such action has not only brought much confusion in the field of medical education and practice but is also threatening to destroy the high standard of education and skill on which efficiency and service in the modern hospital depends. Followers of these pseudomedical groups have been trying recently to force hospital trustees to grant them admission to hospital staffs, or to give them the right to treat patients in the hospital. In some states, indeed, legislation has been enacted making it appear obligatory for hospitals receiving financial support from city or state to permit such practitioners to treat patients in those institutions. The word "appear" has been used advisedly.

TRUSTEES MUST DECIDE

It is the trustees (or directors) of the hospital who must decide this matter, since they are morally, if not legally, liable for the safety and proper care of the patients in the hospital. For this reason, they are fully justified in refusing to permit any one to treat patients in the hospital no matter whether he is a physician, a cultist or any one else who, for moral or professional reasons, is deemed incapable of providing intelligent and efficient treatment for sick persons. The final decision should rest with the courts, wherein individual or corporate rights can be weighed against inexpert legislative enactments. Thus far the courts have recognized the right and duty of hospital trustees to decide who shall and who shall not care for patients in their institutions and have invariably upheld them in such duty. In all instances, save one, which have come to my knowledge, where legal proceedings have been resorted to by those refused admission to hospitals, the trustees have been upheld. In the one instance to the contrary referred to, no active or intelligent opposition was made by the hospital authorities.

POSITION OF THE HOSPITAL STANDARDIZING AGENCIES

So serious to the hospitals is this menace from unqualified practitioners that the several national agencies having to do with the standardization of hospitals are unanimous in their decision that hospitals admitting such practitioners to their staffs are no longer safe places for the care of the sick and are unworthy of being listed as approved hospitals.

HIGHLY TECHNICAL METHODS OF MODERN TREATMENT

With the great increase in the knowledge of medicine during the last thirty years, many methods of treatment have been developed that are highly technical and extremely dangerous in unskilled hands. Surgery, which formerly was employed mainly as a last resort, is now commonly used and is saving annually many thousands of lives. The knife in the hands of an expert can remove a tumor that is sapping a patient's vitality, with a restoring of his health. In unskilled hands, however, the same knife can as easily sever a nerve or other vital part leading to the permanent disability or the death of the patient. The roentgen ray and radium, which are of much importance and service in skilled hands, can create great havoc if applied by those unacquainted with their dangers.

NO COMPROMISE REGARDING STAFF QUALIFICATIONS

These facts emphasize the great danger that sick persons would be subjected to if hospitals were thrown open to any uneducated quack and charlatan who cannot or will not obtain the professional training and skill that physicians are required to possess. In the hospital, therefore, there should be no retrogression and no compromise regarding the qualifications of its staff. Safety lies in the requiring of definite educational, professional and moral qualifications for those who are to treat sick persons within its walls—qualifications such as are required by the medical schools of our well established and reputable universities.[1] Then apply that standard without discrimination to every one admitted to the staff, or allowed to treat patients in the hospital. The standardized hospital, above all institutions, should stand as a champion of honest and efficient service; for truth and scientific fact and as a safeguard against the unreliable fallacies, fads and frauds which in this day have become so prevalent. In its educational function of training physicians and

1. The education that is deemed essential for physicians in civilized nations around the world consists of (*a*) a high school or secondary education; (*b*) two or more years in college; (*c*) four years in a medical school, and (*d*) one or two years as an intern in a hospital.

nurses it is essential that this education include only scientific and sound procedures. Otherwise it will be doing actual harm and result in retrogression rather than progress.

ONE OF MANY REMARKABLE DEVELOPMENTS

In no one type of public institution have improvements been of greater service to humanity than those which have taken place in hospitals. Progress in this field, meanwhile, has been parallel with the remarkable improvements made in other lines of professional and nonprofessional activity. As can be said of so many of the marvelous developments of recent years, "more has been accomplished in the last few decades than in all previous time." This does not mean that the highest acme of perfection has been reached; the wave of progress evidently has just begun. Larger fields of service are to be reached by the modern hospital, and the secret of this further progress appears to rest in the wider development of the hospitals' educational function. This will result not only in a further improvement of the professions of medicine and nursing and in the furnishing of facilities for the practice of modern medicine, but also in a greater and more lasting benefit to the public through the dissemination of information in regard to safe, sane and judicious ideas regarding the preservation of health and the further prevention of diseases and the anguish and distress caused thereby.

THE TEACHING OF TROPICAL MEDICINE *

ALFRED C. REED, M.D.
Associate Clinical Professor of Medicine, Stanford University School of Medicine
SAN FRANCISCO

The curriculum in American medical schools is in process of change. It is not necessary to review all the causes for dissatisfaction with medical education or the problems now seeking solution. In this period of change, however, it is to be noted that less essential subjects are being dropped, and general subjects are receiving more attention at the expense of special subjects. To produce good general practitioners is an aim constantly more in mind. It is interesting that in this changing situation, with increasing emphasis on sound training in fundamentals, attention to tropical medicine is rapidly advancing. We find courses, departments and entire schools where a few years ago the entire subject was unknown. Is this a sound tendency, and why is it being pushed?

WHAT IS TROPICAL MEDICINE?

Strictly speaking, there are remarkably few strictly tropical diseases. Most of the great plagues of the tropics are more or less cosmopolitan. Many of the more dangerous diseases of temperate climates appear in more florid forms, spread faster and run a more virulent course under tropical conditions. In some cases the symptomatology is essentially different in tropical climates. This is illustrated by amebiasis, which is primarily dysenteric in the tropics and costive in colder regions. But the great majority of so-called tropical diseases are also found in temperate climates. To understand their tropical significance, more is necessary than a knowledge of their natural history in temperate zones. We must be familiar with the elements of tropical climate which modify or change disease characteristics. These elements are, essentially, four: humidity, temperature, altitude and sunlight. Various combinations of these four elements lead to the striking features of tropical climates.

Seasonally, geographically or casually, all of these elements are more or less present in the temperate zones and modify disease conditions there. Hence, a study of these physical elements of climate is important for understanding disease conditions in our own country. Naturally, they can best be studied where their greatest extremes and constancy and interrelations are exhibited. This is in the tropics. Therefore tropical sanitation, hygiene and climatology have a definite lesson for medical practice in cool climates.

A definition of tropical medicine is not complete which does not include the sciences of medical and human geography. The elements of human geography in their application to problems of disease require that we relate the natural history of the disease to geographic location, land forms, bodies of water, soil, minerals and climate. It is unnecessary to discuss these in detail here. It is my purpose now only to show that tropical medicine comprehends a study of disease from a somewhat new and different point of view with reference to physical environments, and that many striking features of environmental conditions are best exemplified in the tropics. As a result, we find in the tropics endemic foci of many diseases which can never be controlled in a broad sense until tropical environments are understood and controlled.

IMPORTANCE FOR MANKIND AND THE SCIENCE OF MEDICINE

In estimating the importance of tropical medicine for mankind, we have several broad biologic factors to consider. The story of advancing mankind has been told in temperate climates. Growth in civilization and culture has been closely proportioned to the beneficent and stimulating effects of seasonal change. Lacking the urge of cold, dark winters and climatic variations, man did not progress. The great exception to this law was in Egypt, where automatic irrigation and fertilization more than compensated for the climatic uniformity.

With mankind increasing and progressing most rapidly in temperate zones, it follows that we must approach a time of insufficient food supply. This is perhaps the chief reason that drives civilized man to the tropics as to a great untouched storehouse. While the tropical climate does not favor the production of seed plant harvests, nevertheless other types of foodstuffs are available in unlimited amounts. This is not to speak of the mineral, lumber, industrial and power resources of the tropics, all of which are valuable necessities for the future progress of man. Moreover, to a degree as yet not well established, white races can themselves work and live healthily in the tropics.

It is evident, therefore, that the future of man will depend in no small degree on his conquest of the tropics, and it has been proved abundantly that the conquest of the tropics depends strictly and alone on scientific medicine. There is no other human agency that can meet the problem. It is logical, then, to emphasize tropical medicine in our curriculums, and to interest and stimulate some students to enter this field and all students to appreciate not only the actual clinical importance of the subject in the United States, but especially the great human and scientific value of tropical medicine for the future of mankind.

* From the Department of Public Health and Preventive Medicine, Stanford University School of Medicine.

IMPORTANCE IN THE UNITED STATES

We can classify the importance of tropical medicine for the United States under three headings: (*a*) By means of commerce, travelers, returning government officials, troops and missionaries, cases of tropical disease are being brought into the United States in increasing numbers. (*b*) The elements of tropical climate are present in the United States to an extent that makes the endemic establishment of these diseases here an easy possibility. (*c*) We have already in the United States endemically present tropical diseases that are worthy of special study from the standpoint of tropical medicine. Among such diseases are hookworm infection, malaria, sprue, plague, dengue, spotted fever, intestinal parasites of all types, filariasis, pellagra, tularemia, Malta fever, dysentery and infectious jaundice.

These considerations forcibly urge the need and importance of emphasizing tropical medicine in the curriculums of American medical schools.

IMPORTANCE TO THE MEDICAL STUDENT

The objects of a medical school are twofold. The first object is to train sound general practitioners in the art and science of medicine. The second is to select students not of higher, but of special, aptitude for careers in pure science, in research and in teaching. For the practice of medicine in most parts of the United States in the coming decades, a fair knowledge of tropical medicine is a necessity for reasons already reviewed. For the research student and teacher, it is even more a necessity because of the great problems of prevention and control that await solution today here in our own country. Only a fair beginning has been made. Another angle of the same matter is that, without a systematic acquaintance with tropical medicine, the student planning a research career is handicapped by his lack of full survey of the field of prevention and control of disease, and therefore cannot make the best selection of the direction in which he will apply himself. The plenitude of opportunity in research in tropical medicine is receiving more and more appreciation in this country, and it is only fair that medical students should know the opportunity and that scientific research should receive the advantage of recruiting new workers in this field.

THE CURRICULUM IN TROPICAL MEDICINE

The contents of a course in tropical medicine in an American medical school will naturally depend on the general educational objects of the school. It may vary from a full department with a full-time professor at its head to a series of occasional lectures, optional or cultural in their purpose. The type of physician the school aims to produce and the medical needs it aims to fulfil for its students are the deciding factors in the allocation of time and the selection of subject matter.

At Stanford, there is offered in the department of public health and preventive medicine a course of twenty-two hours, which is designed to give the student a knowledge of the incidence, means of spread, diagnosis, control and prevention of those diseases of hot climates which are encountered in the United States. In addition, it is sought to build up a background of appreciation of tropical sanitation and hygiene, of geographic and climatic influences, of the actual disease problems demanding solution, and some acquaintance with the racial problems involved.

The subjects included are:

1. Intestinal parasites, especially protozoa, vermes, trematodes and dysenteries.
2. Epidemic diseases: cholera, plague, yellow fever, dengue.
3. Filarial infections.
4. Malaria.
5. Climatology, human geography and epidemiology.
6. Avitaminosis, especially beriberi, scurvy and pellagra.
7. Sprue.
8. Yaws.
9. *Leishmania* infections.

This course is supplemented by a concurrent laboratory course of twenty-two hours in which practical technic is perfected, parasites are demonstrated, and ordinary parasites are discovered and identified.

METHODS OF INSTRUCTION

The course in tropical medicine uses a standard textbook with assigned readings in the library and reviews from current tropical literature. Recitation, discussion, lecture and clinical demonstration are intermixed. Later, as well as during the course, the students see and study the diseases discussed as they appear in patients in the outpatient clinic and the teaching wards. In the laboratory, each student learns for himself to discover and identify the common parasites.

SURVEY OF TROPICAL MEDICINE IN AMERICAN MEDICAL SCHOOLS

A survey of the catalogues of most of the seventy-one class A medical schools in the United States gives some interesting information. Most of the Southern schools devote definite attention to tropical medicine. Several of the older, larger, better known schools have developed full departments as at Tulane, or separate schools of tropical medicine and public health as at Harvard and Johns Hopkins. Most are represented by single courses in tropical diseases, and these are given when clinical material is available. The trend toward increasing the time allotted and toward recognition of the subject as such is definite. In several schools, graduate courses are offered or a short, intensive, full-time course. In this connection, note should be made of the rapidly increasing number of laboratories not connected with medical schools that are featuring tropical diagnosis and parasitology.

CONCLUSION

Tropical medicine is being found an important element in the training of medical students in the United States, and many physicians are realizing a need for postgraduate instruction in it. Undergraduate instruction can be fitted into the present curriculum by a different emphasis and classification at small additional expense of hours. The general practitioner in most parts of this country needs such instruction. The development of commerce and travel is opening lines of medical work where such instruction is a necessity.

384 Post Street.

Veterans' Bureau Manual of Nephritis.—THE JOURNAL commented editorially on the Veterans' Bureau manual of Wassermann technic (March 27, p. 956). In Clinical Bulletin 12 of the same series, the compiler has condensed the subject of nephritis into an outline of thirty-six typewritten pages. The introduction shows that the classification is modeled on that of Dr. Henry A. Christian, and avoids the difficulty, often encountered, of correlating anatomic classifications with clinical findings. Acute, subacute and chronic types of nephritis are recognized as main divisions, and the last two forms are subdivided. Each type of the disease is taken up in the orderly way that is generally employed by writers on internal medicine when describing a given disease.

A NEW TYPE OF EXAMINATION FOR MEDICAL STUDENTS *

MATHER CLEVELAND, M.D.
Associate in Anatomy, Columbia University College of Physicians and Surgeons
NEW YORK

In the spring of 1925, Prof. Ben D. Wood of Columbia University succeeded in interesting the Department of Anatomy, Pharmacology and Orthopedic Surgery in a new type of examination. We of the Department of Anatomy were glad to turn from the old essay type of examination to a more comprehensive test of the students' knowledge of the subject. The old type of examination had almost uniformly consisted of eight or ten essay questions for which a total of three hours was allotted. We felt that too much of the students' time was given to English composition and relatively few facts could be developed for the energy expended.

These examinations of the new type are very easy to correct and grade, but their composition is a matter of considerable difficulty. The instructors engaged in producing an examination of the comprehensive objective type must be scrupulously careful to avoid ambiguity in any question. Each question should be of sufficient importance to warrant its inclusion. Only the strictest vigilance will exclude ambiguous and petty or unimportant questions.

We have felt that the labor expended in compiling these tests has been amply repaid by the distinctly more accurate information we have obtained of the students' knowledge of the subject. The grading of all students is such a very chaotic and unsatisfactory performance at present that any attempt to improve it seems eminently worth while. The premedical students are accepted into the medical school on criteria which seem to be faulty when so little is known about their ability after years of observation at school and college. An examination is too often regarded as a penalty by the student. It is suffered to become a purely perfunctory termination to a course by the instructor. It may be made a most valuable aid in determining the ability and achievement of the student.

During the school year of 1925-1926, the department of anatomy has given several of the new type examinations to both the first and second year classes along with one of the essay type to each class. The department of orthopedic surgery used the new type again this year, and several other clinical departments have experimented with it.

It is interesting to note the reaction of the students to the comprehensive test. The great majority of them prefer it to the essay type because it gives them greater opportunity to show what they know. With a large number of questions, inability to answer a few is no calamity. For the most part complaints came only from the rear guard, who are apt to complain in any event. Here, as elsewhere, we find that the "breaks" go to the better team.

We are deeply indebted to Dr. Wood for his helpful suggestions in framing our earliest examinations. His office force has been at our disposal in gathering the material for this study. I am presenting the results of our earliest attempts with this new type of examination at the College of Physicians and Surgeons to those interested in the teaching of medical students. Dr. Wood has already presented this report to his colleagues in a technical journal [1] which is not apt to be seen by the medical profession.

* This study was made possible by a grant from the Commonwealth Fund.

A. PHARMACOLOGY

During the session 1924-1925, Dr. C. C. Lieb, professor of pharmacology in the Columbia University College of Physicians and Surgeons, constructed (with some technical assistance) and tried out several examinations containing new type objective questions. Four monthly quizzes were about equally divided as to time allowance between old type "essay" questions and new type objective questions; a fifty-minute new type test was given in April; and the final examination, of nearly four hours' length, was made up exclusively of objective questions. This final examination consisted of five parts, aggregating the formidable number of 794 items. In spite of the length and searching qualities of this examination, there were few complaints from the students; these complaints came almost entirely from students who were known to be at the lower end of the class. More than half of the students finished and handed in their papers before time was called, and the time was extended for the slower students by the proctors, so that it is practically certain that each student answered all the questions that he could have answered without time limits. Each form of the new type question used in the quizzes is represented in the final examination; for illustrative purposes, therefore, it is necessary to reproduce here only a few questions from each of the five parts of the final examination.

COLLEGE OF PHYSICIANS AND SURGEONS
COLUMBIA UNIVERSITY

FINAL EXAMINATION IN PHARMACOLOGY

1 June, 1925

Part I (54 items)

Directions.—Read each of the following paragraphs before attempting to make it intelligible. Then reread it and in each (. . .) choose the word or words capitalized which, in your judgment, most nearly expresses the truth and underline it or them. Example: Caesar invaded (Canada, *Gaul*, China, *Britain*).

1. The instillation of a few drops of a 2 per cent solution of cocaine hydrochloride into the conjunctival sac of the normal eye of the rabbit causes (Dilation, Contraction) of the pupil. The (Mydriatic Myopic) effect is brought about by an action on the (Nerve Ends, Myoneural Junctions) of the (Parasympathetic, Sympathetic) division of the autonomic nervous system, which innervates the (Sphincter, Dilator) muscle of the iris.

Part II $(22 \times 5) = 110$ items

Directions.—Tabulate the effects of the drugs heading the several columns on the state or condition of the *functional activity* of the structures, organs, tissues, etc., listed below. If effective therapeutic doses, administered in the ideal way, increase the *functional activity*, use "+"; if they decrease *functional activity* use "—"; if the drug has no action write "0"; Complete column 1, as far as you can, before beginning column 2; then 2, then 3, etc.

	Epinephrine	Pilocarpine	Atropine	Nitrites	Strophanthin
1. Splanchnic arteries	.....	.....	.....	.....	.....
2. Splanchnic veins	.....	.....	.....	.....	.....
3. Splanchnic capillaries	.....	.....	.....	.....	.....

Part III $(100 \times 5) = 500$ items

Directions.—In answering these questions assume, unless otherwise stated, that full therapeutic, but not toxic, doses are administered in an admittedly effective way to average adult patients who show neither increased nor decreased tolerance.

1. The article will appear in full in an early issue of the Journal of Personnel Research, 40 West Fortieth Street, New York.

In column 1 indicate by a "+" those drugs that in the presence of normal renal function have a diuretic action; by a "—" those that lead to a decreased tolerance.

In column 2 indicate by a "+" all those drugs which are especially dangerous during pregnancy because of their possible harmful effects on mother or fetus; by a "0" those that have no such deleterious actions.

In column 3 put a "+" opposite all those drugs that may be expected to slow the heart of the average patient; a "—" opposite those that may be expected to accelerate it and a "0" opposite those having neither of these actions.

In column 4 put a "+" opposite all those drugs which may be expected to dilate the bronchi and therefore be of value in the treatment of "spasmodic" asthma; a "—" after all those that are contraindicated in asthma because they contract the bronchi and a "0" after all those having no effect on the caliber of the bronchi.

In column 5 put a "+" opposite all those drugs that have a corrosive irritant or caustic action when applied to the skin or mucous membrane; a "—" after all those that have a demulcent or emollient action and a "0" after those having none of these actions.

	1	2	3	4	5
1. Acacia					
2. Acetanilid					
3. Acetic acid					

Part IV $(21 \times 4) = 84$ items

Directions.—Compare the direct actions of ether, chloroform and nitrous oxide on the circulation during the stage of full surgical anesthesia. In answering the question, put in column "A" "+" for stimulation, increase or improvement; "—" for depression or decrease, and "0" to indicate no action. If two or more drugs act on the same structure, function, etc., in the same direction (that is, if they depress it or if they stimulate it) indicate in column "B" the relative intensity of their action by using 1, 2 and 3, 1 indicating the most intense action.

	Ether		Chloroform		Nitrous Oxide	
	A	B	A	B	A	B
Sample answer: Muscle tonus	—	2	—	1	—	3
Heart:						
Myocardium	..	..	..	..	..	..
Parasympathetic innervation	..	..	..	..	..	..
Sympathetic innervation	..	..	..	..	..	..

Part V (46 items)

Directions.—In each sentence select the correct alternative and put its number on the short line at the right.

1. A saturated aqueous solution of a volatile medicinal agent is called: 1, a tincture; 2, an aromatic water; 3, a solution; 4, a liquor ———.

2. The official saturated aqueous solution of camphor is called: 1, tincture of camphor; 2, spirit of camphor; 3, camphor water; 4, extract of camphor ———.

3. An aqueous solution of nonvolatile substance is called a: 1, tincture; 2, liquor; 3, mixture; 4, spirit ———.

The score in each part was the number of correct responses. The average score of the ninety-seven students constituting the class that took this examination was 465, with standard deviation 62.6. The scores gave a distribution which, in contrast with the distributions ordinarily afforded by old type examinations, is very similar to the normal curve of frequency. The scores ranged from 275 to 637.

In the College of Physicians and Surgeons, pharmacology is a second year course, and we may therefore set up a criterion of "reasoning ability" which will fulfil the conditions imposed by those who are most suspicious of the merits of the new type question forms. This criterion is the average of the final marks received by these ninety-seven men in all their freshman medical courses, and in all their sophomore medical courses except pharmacology. If the new type tests correlate more highly with this criterion than the old type tests do, it would appear that the charge against the new type tests, that they measure only memoriter facts, is dissipated by the very trial relied on by those making the charge. The following correlations between this criterion and indicated pharmacology marks are almost conclusive.

Correlations of the average of all freshman and sophomore medical school grades (save pharmacology) with:

1. Average mark on old type parts of four pharmacology quizzes (aggregating at least 100 minutes of working time) 0.22
2. Average mark on new type parts of four pharmacology quizzes (aggregating not more than 80 minutes of working time) 0.31
3. A fifty-minute "new type" pharmacology test given in April, 1925 ..... 0.36
4. The final pharmacology examination, 794 objective questions 0.54

This evidence shows, beyond doubt, that the new type not only measures breadth of information better than the old type and in less time, but also measures reasoning ability more fully and reliably than the old type does. It might be objected that these coefficients are all so low that they have little practical significance. In answer to this it can be definitely shown that these coefficients are brought to so low a tide by one, and only one, factor; namely, the incredibly low reliability of the old type examination marks, even when the marks of from fifteen to thirty hours of old type examinations are averaged.

INTERCORRELATION OF FINAL GRADES IN TWELVE MEDICAL COURSES

Correlations between twelve pairs of the final course grades given during the 1923-1924 and 1924-1925 sessions range from 0.06 to 0.49, with the average at 0.273. The six intercorrelations of the four sets of half-year average marks given in these two sessions range from 0.324 to 0.558, with an average of 0.446. The correlation between the freshman and sophomore year averages is only 0.495. All the marks involved in the foregoing correlations are based on old type essay examinations, since the pharmacology grades were not used in any of them. It is difficult to conceive how any one could suppose that these old type examinations measure the same central factor "reasoning ability" and still afford intercorrelations so low as these. The assumption as to what they measure and the fact of their low intercorrelations are wholly incompatible. The case for the old type examinations as "convincing indicators" of "ability to reason with and apply knowledge to problematic situations" is made still more doubtful by the slowness with which the intercorrelations increase in magnitude as we increase the number of hours of old type examinations. If the claim that they measure the same quality, reasoning ability, is really true, then their intercorrelations may be treated as reliability coefficients, and the Spearman-Brown [2] formula ought to apply. The fact of the business seems to be that the charge customarily made against new type tests, that they measure only "isolated and unrelated facts," should properly

2. The Spearman-Brown formula is a well established measure constantly used to estimate the reliability of an examination. It is based on the assumption that as the number of questions in an examination are increased, other things equal, the reliability of the examination increases.

be made against the old type tests. The old type tests not only do not correlate with independent measures of known reliability and significance; they fail to correlate with one another.

B. ANATOMY

In the spring of 1925, I decided to try out a final examination made up exclusively of objective questions. Three quarterly examinations of the old type, each lasting one or two hours, had been given, and it was thought that the average of these would furnish a fairly reliable criterion of achievement in the anatomy course against which to measure the reliability and validity of the new type final examination. The new type final examination was made up of four types of questions, aggregating more than 500 items in all. The score attained by the 100 students constituting the freshman class ranged from 180 to 440, with the average at 353 and standard deviation 54.2. The first questions in each part are reproduced here for illustrative purposes:

PART I. TRUE-FALSE

Directions.—Put a plus sign (+) on the dotted line at the left of each statement that is true and a zero (0) at the left of each that is false. Do not guess.

.....1. The female mammary gland is situated in the deep fascia.
.....2. The axillary vein lies lateral to the axillary artery.
.....3. The rhomboid muscles are supplied by the posterior primary division of the fifth cervical nerve.

PART II. COMPLETION

Directions.—Complete the following statements in such a manner as to compose in your opinion a correct answer:

1. The vessels winding around the lateral margin of the pectoralis major muscle are.....
2. The structures penetrating the costocoracoid membrane are .....
3. The clavicle presents on its interior surface the following ridges or prominences .....

PART III. ORIGIN AND INSERTION OF MUSCLES

Indicate the origin by "O" and the insertion by "I" of the following muscles. One muscle is answered correctly to show the method.

	Sacrum	Coccyx	Os Coxae	Femur	Tibia	Fibula	Patella	Calcis	Talus	Navicular	Cuboid	Cuneiform	Metatarsal	Phalanges
Gluteus minimus	..	..	O	I	..	..	..	..	..	..	..	..	..	..
Semimembranosus	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Adductor longus	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vastus lateralis	..	..	..	..	..	..	..	..	..	..	..	..	..	..

PART IV. NERVE SUPPLY AND ACTION OF MUSCLES

Directions.—Give the nerve supply of each of the following muscles, and indicate the action or actions of each by number. The answer to the first is given as an illustration. 1. Flexion. 2. Extension. 3. Medial rotation. 4. Lateral rotation. 5. Adduction. 6. Abduction. 7. Pronation. 8. Supination.

Muscles	Nerve Supply	Action
Lattissimus dorsi	Thoracodorsal	2-5-3
Pronator teres	.....	.....
Biceps brachii	.....	.....

RELIABILITY OF NEW TYPE FINAL EXAMINATION

The reliability of part I, consisting of 130 true-false statements, is estimated by the Spearman-Brown formula to be 0.76, and of Part II, consisting of about 200 completion items, 0.89. It is planned to make an extended study of the reliability of this and other new type medical examinations in the near future. For present purposes the reader may accept the estimate of Dr. Wood that the reliability of the total examination, consisting of more than 500 items, is not less than 0.95.

RELIABILITY OF THE OLD TYPE CRITERIA

The intercorrelations of the three examinations of the old type give an average of 0.50. By using the Spearman-Brown formula we estimate that the reliability of all three together is not above 0.71, and is almost certainly lower than 0.71, since we have evidence that the Spearman-Brown overestimates the growth of reliability in old type examinations. The average of these three one-hour examinations will be called "anatomy criterion," and the average of the final course grades for all freshman courses with the exception of anatomy will be called the "college criterion." This college criterion is approximately the criterion of "ability in medicine" which the college uses as a basis for eliminating students at the end of the freshman year, or passing them on into the sophomore class. What is its reliability? The intercorrelations of the final grades in the four courses in question range from 0.44 to 0.56, with average of 0.52. From this coefficient of 0.52, the Spearman-Brown formula leads us to estimate the reliability of the grades of two of the courses to be about 0.67, and of all four courses together to be about 0.80. These figures are considerably higher than the corresponding figures secured in our study of the criteria used to test the validity of the pharmacology new type examination. The explanation probably lies in the fact that substantial improvements were introduced into most of the examinations given in some of the courses taken by the freshman class now in question. The effect of these improvements was in general an increase in the sampling of materials from the subject matters and an increase in the objectivity of the scoring.

Summarizing our estimates as to reliability, we find that the new type test in anatomy is much superior to either of the criteria against which we may measure its validity.

Reliability coefficient of new test final examination in anatomy (500 + items), 0.95.
Reliability coefficient of college criterion, 0.80.
Reliability coefficient of anatomy criterion, 0.71.

VALIDITY OF NEW TYPE FINAL EXAMINATION

The anatomy criterion and the new type final examination are two rival measures of the achievement of the class in the anatomy course. The correlation between these two measures is 0.731. Which is the more valid? *A priori* grounds alone would indicate that the new type final is by all odds the better of the two measures. Its sampling of more than 500 important facts of anatomy, its objectivity, its high reliability, as against the narrow sampling of the three old type, subjective examinations of low reliability, render any other conclusion almost impossible. The only objection that might be made is that it is a superior test of the "factual" aspect of the course of study, but not of the "reasoning ability" so important in medicine. This objection would be strongly supported if the correlation of the anatomy criterion with the college criterion were higher than that of the new type final with the college criterion, but these correlations are 0.684 and 0.81, respectively. To assert, in the face of these relationships, that the anatomy criterion is a better measure of "reasoning ability" than the new type final is to assert that the anatomy criterion,

made up of more than three hours of old type examinations, is a better measure of reasoning ability than the college criterion, made up of approximately twelve hours of old type examinations.

VALIDITY OF EACH PART OF NEW TYPE FINAL EXAMINATION

The correlations of each part with the anatomy criterion and with the college criterion were calculated with the following results:

	Anatomy Criterion	College Criterion
Total new type final	0.731	0.810
True-false	0.688	0.667
Completion	0.722	0.765
O-I	0.540	0.723
Nerve supply	0.256	0.451

The order of excellence would thus seem to be, from best to poorest, completion, true-false, O-I, and nerve supply muscle action. When the time element is considered, however, the two best would exchange positions; and much of the apparent inferiority of the O-I and N. S. tests might disappear. It must be remembered that these two tests occupied much less time than the true-false and completion tests. The completion part undoubtedly took three times as long to answer as the true-false part; so that in the time allowed to the completion part the students could have taken three times as many true-false questions as were given in this examination. The validity of 390 true-false questions would undoubtedly be greater than 0.76.

III. ORTHOPEDIC SURGERY

Late in the spring of 1925, Dr. H. L. von Lackum, associate in the department of orthopedic surgery, prepared, without any technical assistance from any measurement expert, a final examination consisting of thirteen multiple choice, sixty-one true-false and fifty completion questions. This undertaking is symptomatic of the general desire of teachers in the College of Physicians and Surgeons to escape from the inadequacies of the old type examinations.

The orthopedic surgery course is a comparatively brief course. Oral quizzes were given throughout the course; but the marks of these quizzes were not available as a criterion in this study for several reasons.

The department was convinced of the validity of the objective type of examination from the beginning of the year, and planned to base the year marks almost entirely on the final examination. The only check on the final examination results was in the form of supplementary oral examinations of students who failed on the final or who otherwise seemed to merit review. The oral quizzes, therefore, became almost exclusively pedagogic devices, both teacher and student enjoying unusual and very effective freedom from the restraints of measurement considerations in the classroom and from the "forced" atmosphere prevalent in classroom in which "grading" is often and obviously practiced.

In the absence of any systematic grades in orthopedic surgery against which to test the validity of the new type final examination, I prevailed on Dr. von Lackum to estimate the relative standing of the ninety-eight men in the class on the basis of his personal observation of their work in the course. These subjective estimates were used as the orthopedic surgery criterion. The college criterion was formed as in the study of the new type examination in anatomy; but in this case the marks of three full years of medical college work were averaged.

The correlation between the new type final and the orthopedic criterion is 0.50. The correlation of the three-year college criterion with the new type final examination is 0.611, and with the orthopedic criterion, 0.392.

The reliability of the objective final examination is about 0.70. No means are available for estimating the reliability of the orthopedic criterion, but its validity as a measure of specific achievement is indicated by the correlation of 0.50 with the new type final, and as a measure of general medical school ability by the fact that it correlates as well with the college criterion as one half-year average mark correlates with another half-year average mark.

The intercorrelations of the six half-year averages of these ninety-eight third-year students range from 0.216 to 0.557, with the average at 0.382. The correlations of the first year average grade with second and third year average marks are 0.617 and 0.56, respectively; and of the second with the third year average mark, 0.55. Thus, the average intercorrelations between whole year average grades is only 0.567.

REASONS FOR SUPERIORITY OF NEW TYPE EXAMINATIONS

Those who are accustomed to use the old type of examination exclusively may find it difficult to reconcile the results of this study with "common sense" views of examinations. Most of this difficulty will be due to an exaggeration of the virtues of the old type and of a failure to appreciate the exact nature of new type questions; it is also partly accounted for by an exaggeration of the differences between "memory" and "reasoning ability." These two mental functions are in reality very close correlates. Many teachers have needlessly plagued themselves with a mighty fear of students "getting away with something" by freakishly memorizing everything without "reasoning out" anything. It is a great pity that these marvelous memory freaks are so rare as to be almost mythical. All the scientific evidence available tends to show that "memory" and "reasoning ability," as far as examinations are concerned, are little more than different names for the same thing—a good measure of one is nearly always a good measure of the other. We cannot remember effectively without thinking, and we certainly cannot think or reason without remembering something to think with.

The old type examination as usually administered and scored is much more a mere reproduction or memory test than a well constructed new type test. When a student is asked to describe a joint or the action of a drug, he can do little more than set down in hasty sentences the facts that he has learned through reading about and observing the joint and the drug in question. It is difficult to see how any significant reasoning is possible in the answering of such a question.

The fact of the matter seems to be that the main value of the old type examination is that it *is* a measure of ability to reproduce what has been read or observed; and its main weakness is not so much that it does not measure "reasoning ability" but that it is a very unreliable and inadequate measure of "memory." It is not a good measure of either of these functions because, among other reasons: (1) it is *subjective* to both student and teacher; (2) it can involve only a *narrow sampling* of subject matter and of performance; (3) it involves the exercise of a very special talent, prose writing, under very adverse conditions; and because (4) it not only permits but provokes bluffing and playing to personal prejudices on the part of both student and teacher.

The new type test is a better measure of both reasoning and information because it is objective, it provides very wide samplings of materials and performances, it involves few irrelevant and distracting activities, and it may include problems of fact, of cause, of effect, of relations and of judgment which make as great and as genuine demands on the higher intellectual processes as those which are found in old type tests.

CONCLUSIONS

1. Objective forms of questions seem to be as well adapted to the measurement of achievement in medical courses as in the average college course.[3]

2. Each of the nine forms of questions tried out in this experiment have considerable validity for medical school courses. The most effective seem to be the standard forms—true-false, completion and multiple choice; but with more adequate trials, the tabular forms of questions may prove to be as good as, or better than, the standard forms, particularly for certain aspects of medical work.

3. The reliability and validity coefficients of the objective examinations described in this report are two or three times as high as those of much longer examinations of the old type in the same subject matter.

4. The objective examinations measure "reasoning ability," as defined by the criteria now used in the College of Physicians and Surgeons, more accurately and more reliably than old type examinations of equal or greater length measure it.

5. The reliability and validity of medical college grades based on old type examinations have been found to be entirely inadequate. Our results confirm those of other investigators.[4] The first year of medical school work predicts second year work no better than high school average marks predict college success.

6. The adaptability of objective forms of tests to medical school work demonstrated by this experiment suggests the hope that eventually there may be derived a series of objective, reliable and administratively convenient examinations on the common essentials of the medical curriculum, which will be universally applicable and which will afford accurate measures of defined achievement expressed in comparable and universally meaningful units. Such measures are prerequisite to the constructive educational guidance of students and to certain types of long needed research in medical education. As in all other educational institutions, the first duty of the medical college is not to teach but to learn students—to learn whether they belong in medical college, and if so, what specialties they might best pursue, if any. That this first duty has not been satisfactorily discharged by higher institutions generally is indicated by the high and increasing academic mortality rates in our colleges of liberal arts, of engineering, of law, etc. The traditional examinations have not merited the confidence which we have reposed in them. The objective forms of tests will by no means furnish panaceas for all the maladjustments in our educational system; but that they are capable of giving us more exact and more meaningful information about our students than the traditional examinations has been demonstrated beyond reasonable doubt.

437 West Fifty-Ninth Street.

3. Wood: Measurement in Higher Education, World Book Company, 1923. Measurement of Law School Work I and II, Columbia Law Review, March, 1924; March, 1925.

4. Notably of Prof. E. A. Bott (The Predictive Value of College Marks in Medical Subjects, J. Educational Research, September, 1925). See also Moss, F. A., and Hunter, O. B.: Public Personnel Studies, Washington, D. C., February, 1925, p. 52.

THE FEMALE SEX HORMONE

V. A NEW METHOD OF DETERMINING SEX IN THE PRESENCE OF MALFORMATION OF THE GENITAL ORGANS *

ROBERT T. FRANK, M.D.
AND
M. A. GOLDBERGER, M.D.
NEW YORK

The sex of a person with malformation of the external genitals and malformation or absence of the internal organs of generation may be difficult to determine. In recent years it has not been unusual to perform a biopsy on the gonads (at times necessitating laparotomy) to arrive at a valid conclusion.

In two instances of malformation we have definitely established the sex of the patients by demonstrating the presence of the female sex hormone in the circulating blood by injecting lipoid extract of the blood into castrated mice and thereby producing a positive (estrual) vaginal spread.[1]

The theoretical considerations involved are that a person possessing functioning ovaries, irrespective of whether the tubular tract (vagina, uterus, tubes) and external genitals are malformed or aplastic, should have a demonstrable quantity of female sex hormone in the circulating blood some time between the fifth and fifteenth days after ovulation has taken place. Therefore, blood specimens should be taken at weekly intervals in order not to miss the acme of the reaction.

Negative results cannot be considered of definite significance, as ovaries might be present but for one reason or another might not be functioning over longer or shorter periods of time. Positive findings, on the other hand, must be evaluated as decisive, and even in the most extreme case, that of an ovotestis in which cyclic ovulation takes place, such a person should be considered as predominantly feminine.

The two cases in point are as follows:

CASE 1.—A. Z., aged 24, with normal vulva, had been operated on with only a small degree of success for the establishment of a vagina. The urethra was greatly dilated. Rectal examination showed no evidence of the presence of uterus, tubes or ovaries. The patient possessed feminine sex instincts. The facies was slightly acromegalic. There was a considerable hypertrichosis. Feminine sex characters were normally developed. Blood abstracted, March 26, proved negative. April 22, the reaction proved positive. This shows that the patient is a female.

CASE 2.—S. S., aged 22, complained of nosebleeds at irregular intervals of never less than one month. She had no strong sex impulses, but her inclination was toward men. The breasts were feminine; so was the hair distribution. The vulva was normal. The urethrorectal septum was very thin. High up a transverse band was felt, but no evidence of uterus or ovaries could be established. The first blood specimen proved to be strongly positive. This established the sex.

This method should prove a boon wherever the question of establishing the sex of a person arises and a positive feminine reaction can be obtained. It is naturally not applicable before the age of puberty.

10 East Eighty-Fifth Street—145 West Eighty-Sixth Street.

* From the Pathological Laboratory and Gynecological Service of Mount Sinai Hospital.

1. The details of the procedure are given by: Frank, R. T.; Frank, M. L.; Gustavson, R. G., and Weyerts, W. W.: Demonstration of the Female Sex Hormone in the Circulating Blood, I, Preliminary Report, J. A. M. A. **86**: 510 (Aug. 15) 1925. Frank, R. T., and Goldberger, M. A.: The Female Sex Hormone, IV, Its Occurrence in the Circulating and Menstrual Blood of the Human Female: Preliminary Report, ibid. **86**: 1686 (May 29) 1926.

"MILK SICK," OR WHITE SNAKEROOT POISONING

W. E. WALSH, M.D.
MORRIS, ILL.

Eupatorium urticaelfolium, the white snakeroot, belongs to the aster family. It is sometimes called boneset, polewort or squaw weed. It grows from 1 to 4 feet high and is widely distributed in the Western states from Minnesota to Louisiana and eastward. Its habitat is rich, deep, shady woods, but it will grow on a hillside in the shade, and on well drained land in the open. The common thoroughwort belongs to the same family and grows in the same locality. The only way to eradicate snakeroot is to pull it out or cultivate the ground.

Dr. Dwight Marsh of the United States Department of Agriculture produced white snakeroot poisoning after the plants had been sterilized in autoclaves. Walter Sackett produced poisoning by extracts, and related experiments have been performed at the Purdue University and North Carolina agricultural stations. This work has determined that the trembles in cattle arise from their eating white snakeroot, and that the cause of "milk sick" in humans is the consumption of milk and butter made from the milk of cows that have eaten white snakeroot.

This disease was recognized as far back as 1776 in North Carolina. Over many years it has taken lives in Tennessee, Ohio, Indiana, Illinois, Missouri and other Mississippi states in which it is endemic. Still there are large quantities of snakeroot in the woodlands along streams in all these states. Six deaths were reported in 1925 in Illinois from milk sick, and no doubt others were unrecognized. Nine cases with no deaths occurred in Grundy County, and a large number of cattle died.

I have seen forty-four cases of milk sick in thirty years and know indirectly of about sixty more. A few cases, with running comments, taken from this period, will illustrate how our clinical ideas developed concerning this strange disease.

REPORT OF CASES

In 1902, three members of a family near Morris had been sick for about two weeks, with loss of appetite, general weakness and slight pains in the region of the stomach. One of the group, the hired man, had apparently recovered completely. He walked 4 miles to see a physician, walked home and went to bed. He died in coma the next day. The employer, who had been sick and had recovered, assisted with the funeral and died in three days. The diagnosis was "milk sick," of which nothing was known. The late Dr. Bertram Sippy was called, and we obtained specimens of blood, sputum, urine and feces while the man was alive. Rabbits and guinea-pigs were injected and cultures made. Parts of all organs were taken at necropsy and were found to have undergone fatty degeneration, especially the pancreas and liver. Sippy found in the blood an organism that resembled the colon bacillus. This is the first postmortem of such a case on record, but no conclusions were formed.

Nov. 25, 1908, in the city of Morris I found a girl, aged 8 years, deeply comatose, with the pupils widely dilated, extremities cold, breathing labored, pulse 116 a minute but of fair volume, and a temperature of 97 F. She was unable to swallow, and her breath had a strongly sweetish odor. Diabetes was suspected. The mother related that two weeks earlier the child had had slight vomiting, weakness in the knees, pains in the legs, headache and prostration. She had been given free catharsis. In four days, she returned to school and continued to go until the day before I saw her. At that time she had eaten a large dinner and had become heated while playing. When she came home she went to bed, refused food, vomited every hour until 4 a. m., and died at 11 o'clock. The urine had given a mahogany color on addition of ferric chloride. There was no sugar.

Other members of the family had been ill. Milk sick was then suspected, and we found that the family supply of butter came from the milk sick district. I reasoned that a small quantity of butter could not poison the whole family; I thought it must be an infection, and called Dr. Jordan of the Infectious Hospital of Chicago and Dr. Harris. We made a postmortem examination. When the abdomen was opened, the odor of acetone was pronounced. Fatty degeneration of all the tissues was evident. A spore forming organism was isolated, which was named *Bacillus lactimorbi*. This was the second postmortem of such a case on record.

The second day after the death of the little girl, her mother was taken violently sick with vomiting, extreme prostration, pain in the abdomen, constipation, headache, subnormal temperature and fast pulse. The diacetic acid and acetone found in the case of the little girl suggested that we were dealing with a condition of severe acidosis. Diacetic acid was found in the mother's urine. In accordance with the usual treatment of acidosis at that time, we gave a teaspoonful of sodium bicarbonate by mouth every hour and 2 ounces by rectum every six hours. She made a complete recovery. This was the first case of milk sick which was treated in this way.

In July, 1918, I saw a cow with trembles. It was a dry time, in early summer, and the white snakeroot was from 6 to 12 inches high in the woods where the cow had been pastured. After the cow succumbed, the owner dragged the carcass to the edge of the river and enclosed it and a live hog within a hog tight fence. The hog had, in this way, access to water, but fed on nothing except the carcass of the cow. When the carcass was all eaten, we released the hog and ran it around. The hog did not show symptoms. There are reliable reports of hogs having died from eating cattle that were killed by snakeroot and that were still eating it when they died. In my case, however, the cow had been kept away from snakeroot for about three weeks and had ample time to excrete the poison from her body, so that there was little or no snakeroot poison left for the hog to ingest.

In October, 1925, I found a patient with a white blood count of 6,500; blood pressure, 90; extreme prostration; vomiting; distress in the epigastrium; pulse, 108 a minute, and temperature, normal. The acetone odor of her breath made me suspicious, and I inquired in regard to the cattle. None were sick. They had been north of the canal in high dry ground, but the milk of one had greatly decreased. In the pasture, we found quantities of white snakeroot that had recently been eaten down. The pasture was bare of all other vegetation, and it was evident that the cattle, as a last resort, had eaten the snakeroot.

The fatigue and recurrences characteristic of the disease are shown in the following case:

Dec. 17, 1925, I saw a patient who had symptoms of milk sick in the fall of 1924 and had never recovered. He was repoisoned in August, 1925. While husking corn vigorously in November, he became tired and had difficulty getting to the house. He had to rest several minutes. He had large quantities of diacetic acid in his urine; no increase in temperature; pulse, 88 a minute; leukocyte count, 7,000; blood sugar, 143; systolic blood pressure, 105; diastolic, 70; reflexes diminished, and a strong acetone odor in the breath. He had had five recurrences similar to the foregoing.

Although in the foregoing account there is nothing to disprove the association of micro-organisms with milk sick, it is evident that, when man consumes the milk of cows that are eating white snakeroot or butter made from the milk of these cows, he ingests a poison that causes fatty degeneration of all the tissues, especially the liver and the pancreas.

It is probable that the snakeroot poison destroys so many cells that the body is incapable of carrying on its normal chemical processes and that, consequently, we have recurrence of acidosis every time the individual attempts to eat normally or work to capacity somewhat the same as in diabetes. No sugar was found in the urine in any of these cases.

The treatment, in brief, is one-half drachm (2 Gm.) of sodium bicarbonate and 1 drachm (4 Gm.) of magnesia magma every hour and after vomiting until the bowels move freely. To this is added an enema of 2 ounces (60 cc.) of sodium bicarbonate in 12 ounces (385 cc.) of warm water every four hours until the urine turns alkaline; the treatment is continued by mouth until a 10 per cent solution of ferric chloride in the hands of the nurse does not show any mahogany colored precipitate in the urine. The diet is skimmed milk, orange juice and custards. Whisky seems to relieve the gastric spasms. When vomiting is incessant, dextrose, in the proportion of a teaspoonful to a cup of water, is mixed with the sodium bicarbonate enema. In the last two cases, ampules of dextrose solution for intravenous injections, and insulin were kept on hand, but not used.

THE PROPHYLACTIC USE OF MEASLES CONVALESCENT SERUM

WILLIAM H. PARK, M.D.
AND
ROWLAND G. FREEMAN, JR., M.D.
NEW YORK

As measles is the most prevalent of the diseases of infancy and early childhood, and also predisposes to a complicating bronchial pneumonia, it is one of the two most fatal of the communicable diseases of early childhood, and its prevention has been eagerly sought by clinical and laboratory investigators. The ideal in their mind is to discover the germ and prepare a vaccine such as we have against diphtheria, tetanus and scarlet fever. Tunnicliff in the United States and Caronia in Italy have reported such discoveries. Their work is now being subjected to crucial tests. Herrmann has proposed a very interesting method of inoculating infants intranasally with the secretion obtained from the nose of an infant during the early stage of the disease. He proposes to do this inoculation during the sixth or seventh months of life before the infants have entirely lost their inherited immunity. This method, in our opinion, is not practicable for general use. It has been so far impossible to infect animals with any isolated measles virus or to produce in them an antiserum to the disease. While waiting for confirmation of the discovery of the germ causing the infection and the development of an antiserum, attention has been focused on the serum from human convalescents. It has long been known that the immunity acquired by an attack of measles is very marked, and that it persists in the majority of those who have had it for their whole lives. Some thirty years ago, a German physician used large amounts of serum from convalescents in the treatment of several cases in which the symptoms were just beginning. The results were favorable, and he suggested that it might be used as a preventive measure. The first results published on the use of convalescent measles serum were by Nicolle and Conceil. In the same year, 1916, Park and Zingher injected forty-one very recently exposed children at the Metropolitan Hospital. Twenty of these children received 8 cc. of serum, and none of them developed measles. Twenty-one received 4 cc. and three developed the disease, one on the fifteenth day, one on the seventeenth day and one on the twenty-fifth day after the serum was given.

Since then, a number of articles have been published on the use of whole blood, serum and plasma obtained from measles convalescents.[1] Degwitz, in 1920, 1921 and 1922, published the results obtained by him and those working with him in more than 1,000 cases. The results were on the whole quite favorable in that if the disease was not prevented in some, it was lessened in its severity. His routine method was to draw the blood

TABLE 1.—*Total Deaths and Deaths from Measles*

	1918	1919	1920	1921	1922
Total deaths	98,139	74,823	73,949	64,587	69,020
Total deaths under 5	21,909	15,744	17,286	13,672	14,847
Total deaths from measles	790	218	736	365	977
Deaths from measles under 5	734	210	687	350	927
Percentage under 5	4	1	2.5	1	6

TABLE 2.—*Amounts of Serum Used by Degwitz*

3.5 cc. in those exposed 4 days or less
5.0 cc. in those exposed 6 days or less
7.0 cc. in those exposed 7 days or less

Labels for Measles Convalescent Plasma

1. Each vial contains one dose of plasma—5 cc.
2. One dose is enough for children under 3 years or in the first four days of exposure
3. Children over 3 years or exposed more than four days should receive a double dose
4. Injection given intramuscularly through antitoxin needle

Dr.....Address.....Borough.....
Was Given.....Visit.....M. Im. Ser.....
Lot No.....For Case.....
Name.....Address.....Age.....
Name.....Address.....Age.....
Date.....192..Distrib. Ag.....

Record of plasma given to physicians.

DATA FOR INJECTION OF EXPOSED CHILDREN

	Name	Age	Address	Amount Inject.	Date	Lot No.
1.						
2.						
3.						

Exposure, date of.....Number of.....Degree of.....

DATA ON CASE TO WHICH CHILDREN EXPOSED

Date onset of fever.....Coryza.....Koplik Spots.....
Rash.....
Signature of Physician.....
Note Permit for Inspector to visit case

Card to be filled out by physician and returned to laboratory.

1. A bibliography is given by Zingher, Abraham: Convalescent Whole Blood Plasma and Serum in Measles, J. A. M. A. 82: 1180-1187 (April 12) 1924.

between the seventh and seventeenth day after convalescence, allow it to clot, and to use the serum intramuscularly after sterility and Wassermann tests had been done. Degwitz does not believe that the results obtained warrant the use of serum after the seventh day of exposure. He reports among his own series 85 per cent complete protection. This is more favorable than the results in other large series. Probably some of his children were not very markedly exposed.

Since 1921, the convalescent serum has been utilized with excellent results in the hospitals for contagious diseases in New York City in children who have been exposed by the development of measles in the wards. A grant of money by the Metropolitan Life Insurance Company made it possible to attempt to provide enough serum for all exposed inmates in children's institutions in New York City, and also for all the children in the city who were under 3. These classes of children were chosen because institutional children and those under 3 years of age are the most liable to pneumonia.

The use of convalescent serum in an infected child may prevent the development of the disease, modify the severity of the attack, or fail entirely of any effect. So far as the interests of the child are concerned, the best result is the development of a very mild attack. Under such conditions there is practically no danger of complicating pneumonia or any other complication. Recovery is practically certain, and the child has the advantage of an active immunity which may be considered lifelong. Those children have as a rule a very slight rise of temperature, perhaps to 100 or 101 for a day or so, and a slight coryza and a very slight to a moderate rash. Koplik spots may or may not be present. Those who are absolutely protected have only a passive immunity so long as sufficient serum remains, and this varies from about two to four weeks, and depends on the individual and the amount of serum injected. The child is after this period as susceptible as before.

The great problem in the prevention of measles by this method has been the difficulty of obtaining a continuous supply of blood large enough to meet the demands of a big city. When the work was started in New York, as far as possible, every adult measles convalescent was asked to give some blood, for which service a suitable reward was offered. Because of the small incidence of measles in adults in New York City and the usual refusal of patients to give their blood, this source of supply proved to be inadequate. It then came to the attention of the department that there was an epidemic of measles of considerable extent among the young adult students of a Southern university, all of whom came from rural districts. The students volunteered in large numbers to give their blood, and as they had all been treated in the university hospital, the diagnosis of measles was certain.

The method of drawing the blood was as follows: At the Willard Parker Hospital, blood was drawn on the ninth day after the defervescence of fever up to the twenty-first day, but at the Southern university the time was more varied, and some was drawn as late as five months after the disease. In the case of adults, all the blood was drawn through a 16 gage luer needle into a 500 cc. bottle containing 20 cc. of 25 per cent sodium citrate solution and 0.3 Gm. of oxyquinolin sulphate (chinosol) as a preservative. This preparation was used because it was found that in the dilution in which it was used it was an efficient bactericidal agent; the red cells were not destroyed, and it was not irritating when injected intramuscularly. The bottles were then put in the icebox and the cells allowed to settle, or were centrifugalized, and the plasma pipetted off. Blood for a Wassermann test was taken at the time of bleeding, and a sterility test was done at the time the plasma was put up into small bottles.

Plasma was used instead of serum, because of the greater yield for the amount of blood drawn and the greater ease of handling. All the blood drawn within six days of the same period in convalescence was pooled. Thus far, the figures indicate that the efficiency of the plasma is not markedly diminished by postponing bleedings for three months after the occurrence of the disease, and that storage in the icebox for six months does not appreciably alter its usefulness. The plasma was put up in 3 cc. and 6 cc. vials and 30 cc. bottles. The vials were distributed to private physicians with printed directions for use, and a card was given which was filled out by the physician and mailed back to the laboratory. This card contains questions concerning the number of children exposed, the date and type of exposure, the date of injection, and the lot number of plasma. Twenty-one days after injection, the case was investigated by a member of the department staff. The 30 cc. bottles were kept for institutional use when a large number of children were to be injected.

TABLE 3.—*Data in Institutional Children Receiving Preventive Injections*

Amount of Plasma Injected	Number of Children	Modified Measles, per Cent	Unmodified Measles, per Cent	Complete Success, per Cent	Incomplete Success, per Cent
3 cc.	219	20	8	72	92
4 and 5 cc.	190	8	2	90	98
6 to 10 cc.	243	6	2	92	98
Total in institutions	753	11	5	84	95
Total in families	226	42	6	52	95

RESULTS OBTAINED IN NEW YORK CITY

More than 1,500 children received preventive injections between December 1 and June 1. From 979, we have fairly accurate data as to the date and degree of exposure, the amount of plasma injected, and the success attained.

Of these 979 children, 753 were exposed in institutions and 226 in private families. In 404 of the institutional children and in all of the children in families, the exposure was direct. In 349 it was indirect, in that actual personal contact with a measles patient was not proved.

No bad effect followed the injections in any case. Only one of the children died, and this one had an empyema before contracting modified measles and was only 2 years of age. We do not think that the attack of measles appreciably hastened its death.

CONCLUSIONS

The injection of 6 cc. of convalescent serum or plasma into a child under 3 years of age and from 6 to 10 cc. for a child over that age who has been exposed for less than five days to measles is sufficient, as a rule, to prevent infection. If it does not, it almost certainly so modifies the attack that it is very mild and is not likely to lead to complications.

The prompt use of the serum will prevent serious outbreaks of measles from developing in institutions and so prevent the development of complicating pneumonias.

It would be of extreme value to have a supply on hand to prevent outbreaks of measles among troops, such as occurred so disastrously in the late war.

The serum gives immunity for only two weeks to one month. In the modified cases there is lasting immunity.

The serum gives the greatest accumulation of antibody shortly after the convalescence of the patient. At the end of three months, the antibodies are still abundant but probably less in amount.

In order that the use of convalescent measles plasma may become general, some plan must be devised by which the supply will be constant. It would seem that if every physician equipped himself with the very simple apparatus necessary for obtaining the blood, and if the attempt was made to draw between 10 and 25 cc. of blood from every case seen in children and larger amounts in adults, he would have enough for the majority of exposures in his practice, the average dose being only 5 cc. Institutional needs must be met by other methods, such as the one to which the New York City Department of Health had recourse. The department of health has a standing offer to send a physician to any convalescent adult who has given consent to have his blood drawn. After the blood is withdrawn, a fair proportion is kept for the use of the physician who referred the case to the department.

PROPHYLACTIC VALUE OF BLOOD OF CONVALESCENTS IN MEASLES *

SIDNEY V. HAAS, M.D.
AND
JULIUS BLUM, M.D.
NEW YORK

For nearly two hundred years, attempts have been made to immunize against measles. To Home [1] of Scotland is ascribed the first attempt at active immunization by vaccination with human blood, and also by the transplantation of nasal mucus, on a swab of cotton from a child having measles, on the nasal mucous membrane of another child. Hektoen [2] was the first to use a mixture of incubated human blood and ascites broth in an attempt to induce a mild form of infection. Recently, Herrman [3] has suggested a method of active immunization, making use of the well established fact that infants under 5 months of age are practically immune to measles. His method is to take the nasal mucus of a patient with measles, from twenty-four hours before to twenty-four hours after the eruption, and transplant it on the nasal mucous membrane of another infant. This transference, in many cases, brings about slight constitutional symptoms within a few days and results in a permanent immunity.

Since 1918, when Nicolle and Conseil [4] first published their results on the use of serum from convalescents to immunize children who have been in contact with measles, evidence has accumulated as to its protective value. Richardson and Connor [5] in the United States, and Degkwitz [6] at Pfaundler's clinic in Munich, soon followed with publications on the use of the serum of convalescents as a prophylactic against measles. Degkwitz, in a clinic in which there had been 29 per cent mortality for children under 2½ years of age, successfully immunized 700 children with intramuscular injections of serum of convalescents, collected from seven to nine days after defervescence. His results showed that from 2.5 to 3 cc. of serum, injected before the fourth day of exposure, protects a child up to the age of 14 years. Injections on the fifth to sixth day of exposure require from 6 to 7 cc., whereas injections on the seventh day produce uncertain results, and on the eighth day or later have no effect.

Kutter,[7] in dealing with the problem of isolation in institutions, states "that when serum of convalescents is administered within the first four days of incubation, isolation is unnecessary and epidemics are stopped." Stimson [8] states that "except in extraordinary circumstances, measles is more serious the younger the patient," and Marie [9] cites "the great prevalence and danger of measles in the very young, the poorly nourished or weak and children in institutions." Park [10] says that from "5 to 10 cc. of convalescent serum is sufficient, as a rule, to prevent infection. If it does not, it almost certainly so modifies the attack that it is very mild and not liable to lead to complications." Zimmermann,[11] Blackfan, Peterson and Conroy,[12] Zingher,[13] Davis,[14] Brügger,[15] Weaver and Crooks,[16] and many others are unanimous as to the good result obtained from the use of serum of convalescents in producing a passive immunity. Stress is laid, however, by most workers, on the difficulty of procuring a sufficient supply of serum, plasma or blood of convalescents within from seven to nine days of defervescence, to cope with an epidemic in an institution of fair size.

An outbreak of measles occurred at the Home for Hebrew Infants, after a period of freedom of eight years. With a census of 375 children under 6 years of age, among whom were only eleven known immunes, it was thought advisable to administer plasma of convalescents in order either to check an epidemic, or, as first suggested by Debré and Ravina,[17] to modify the disease and thus possibly create an immune population. Since a sufficient amount of serum (collected from six to nine days after defervescence) could not be obtained, this epidemic presented an opportunity to test the value

* From the Home for Hebrew Infants.
* Read before the Section on Pediatrics of the New York Academy of Medicine, Jan. 14, 1926.

1. Home, F.: Medical Facts and Experiments, London and Edinburgh, A. Millar, 1759.
2. Hektoen, Ludvig, quoted by Heinz Zeiss: Die experimentelle Masernübertragung, Erben. d. inneren Med. u. Kinderh. **20**: 492, 1921.
3. Herrman, C.: Immunization Against Measles, Arch. Pediat. **32**: 503 (July) 1915; **39**: 607 (Sept.) 1922.
4. Nicolle, C., and Conseil, E.: Pouvoir préventif du sérum d'un malade convalescent de rougeole, Bull. et mém. Soc. méd. d. hôp. de Paris **42**: 336 (April 12) 1918; Prévention de la rougeole au moyen de l'inoculation du sérum ou du sang complet des convalescents, Arch. de l'Inst. Pasteur de l'Afrique du Nord **1**: 193, 1921.
5. Richardson, D. L., and Connor, Hilary: Immunization Against Measles, J. A. M. A. **78**: 1046 (April 12) 1919.
6. Degkwitz, R.: Ueber Versuche mit Masernrekonvaleszentenserum, Ztschr. f. Kinderh. **25**: 134 (May) 1920; Ueber Masern Rekonvaleszentenserum, ibid. **27**: 171 (Dec.) 1920; Züchtung des Masernerregers und Masernschutzimpfungen lebenden Erregern, Monatschr. f. Kinderh. **23**: 186 (Nov.) 1921; Ueber Masernschutzserum, Deutsche med. Wchnschr. **48**: 26 (Jan. 5) 1922.
7. Kutter, P.: Weitere Erfahrungen mit Masernrekonvaleszentenserum, Ztschr. f. Kinderh. **36**: 119 (Sept.) 1923.
8. Stimson, P. M.: Certain Aspects of Measles, Arch. Pediat. **39**: 11 (Jan.) 1922.
9. Marie, P. L.: Recherches récentes sur la rougeole, Presse méd. **30**: 457 (May) 1922.
10. Park, W. H.: Proceedings of the International Conference on Health Problems in Tropical America, United Fruit Company, Boston, 1924.
11. Zimmermann, L.: Zur Masernprophylaxe nach Degkwitz, Deutsche med. Wchnschr. **48**: 1701 (Dec. 22) 1922.
12. Blackfan, K. D.; Peterson, M. F., and Conroy, F. C.: Use of Convalescent Serum as a Prophylaxis in Measles and Chickenpox, Ohio State M. J. **19**: 97 (Feb.) 1923.
13. Zingher, Abraham: Convalescent Whole Blood, Plasma and Serum in Prophylaxis of Measles, J. A. M. A. **82**: 1180 (April 12) 1924.
14. Davis, R. C.: Immunization Against Measles with Convalescent Serum, M. Clin. N. America **7**: 1259 (Jan.) 1924.
15. Brügger: Zur Masernbekämpfung, München. med. Wchnschr. **71**: 858 (June 27) 1924.
16. Weaver, G. H., and Crooks, T. T.: Further Observations on the Use of Convalescent Serum in the Prophylaxis of Measles, Wisconsin M. J. **23**: 555 (March) 1925.
17. Debré, R., and Ravina, J.: La rougeole modifiée par l'injection préventive de sérum de convalescent, Bull. et mém. Soc. méd. d. hôp. de Paris **47**: 226 (Feb. 9) 1923.

of older plasma, which W. H. Park of the Research Laboratory of the New York City Department of Health generously supplied. The plasma was obtained from sixty adult bleedings, prevented from clotting by sodium citrate (1.5 per cent) and protected from bacterial contamination by oxyquinolin sulphate (chinosol), 1:1,500; the blood cells were separated by centrifugalization. When the supply of plasma was exhausted, fresh unmodified whole blood, obtained from measles convalescents in the institution, was used for immunization purposes. The blood from individual donors was not pooled but was injected immediately into the

TABLE 1.—*Incidence of Measles in Forty-Five Children Who Did Not Receive Protective Inoculation* *

Ages of Children	Measles			Interval Between Exposure and Onset of Measles		
	No. of Cases	Per Cent	Type	Within Two Weeks	Within 2 to 3 Weeks	Within 3 to 4 Weeks
From 2 to 5 years	38	84	All average severity	18	8	12

* These children all came in intimate contact with others who developed measles.

recipients. The amount of plasma injected was from 6 to 10 cc., whereas the amount of whole blood injected was from 5 to 7 cc. All injections were given intramuscularly into the upper and inner quadrant of the buttocks, without any untoward result.

As soon as the first case of measles developed in the institution, the children of two exposed wards were injected. Despite all attempts at isolation, which could not be made complete, children contracted measles in the exposed and other wards and were subsequently injected as exposure occurred. At all times, the children were in intimate contact with others who developed measles, and who therefore were reexposed one or more times. The epidemic lasted for seven months, from July, 1924, to January, 1925. Plasma was used for the injections during the summer months, and whole blood thereafter.

There were forty-five children in the institution who did not receive protective inoculation but came in intimate contact with others who developed measles. Thirty-eight of these, or 84 per cent, contracted measles within one month of exposure. The measles of most of these children was of average severity, characterized by Koplik's spots, marked prodromes, a diffuse confluent maculopapular rash over the whole body, and a rise in temperature to from 103 to 104. The eruption and the temperature usually lasted from three to four days. Some of these children were acutely ill, with marked constitutional reaction and a corresponding protracted convalescence. This will give an idea of the incidence and type of measles to be expected if no protective measures had been undertaken. The complications arising in these unprotected children will be discussed later (table 1).

One hundred and seventy-four children were injected with plasma of convalescents, varying in age from 1 to 4 months after defervescence at the time of collection and stored for from one-half to four and one-half months before injection. Considering the plasma collectively, 78 per cent of all the children were protected for three weeks, and 51 per cent were protected for three months or more. Plasma of convalescents, collected one and three months after defervescence, protected 89 per cent for three weeks. There was very little difference in the protective value of plasma from patients who were convalescent four months at the time of collection, whether it was 1 or 4½ months old at the time of injection. The earlier the plasma is collected after defervescence, the greater is its protection value.

Eighty-eight of a total of 174 children injected with plasma from patients convalescent from one to four months, and stored from one-half to four and one-half months before injection, contracted a mild modified form of measles. It is interesting to note that there were sufficient antibodies in the plasma to modify the measles, even when it developed as late as three months after injection. In the modified form of the disease, Koplik's spots were occasionally absent, whereas the conjunctivitis and coryza were either very mild or frequently absent. The eruption was light colored and discrete, the papules of the size of the head of a pin and less extensive over the extremities. There was a rise in temperature to from 100 to 102, with defervescence and disappearance of the rash within from twenty-four to thirty-six hours. None of the children who had a modified measles appeared to be ill, so much so that it was impossible to keep them in bed at the end of twenty-four hours. Quite a few children, on account of recurrent attacks of bronchopneumonia and gastrointestinal disturbances, were underweight, anemic and generally below par before they developed a modified measles. These children convalesced from their measles without any untoward result. We feel that the modification of the disease was responsible for this and that, if no protective measures had been undertaken, the results, especially in this type of infant, would have been different (table 2).

Including all plasma that was used, irrespective of its age at collection or at the time of injection, there is very little difference in protective value, when given from the

TABLE 2.—*Data of One Hundred and Seventy-Four Children Injected with Plasma of Convalescents* *

Interval					Number							
					Protected				Not Protected (Modified Measles)			
					Number		Per Cent		Onset			
Between Defervescence and Collection of Plasma, Months	Between Collection of Plasma and Injection, Months	Ages of Children Injected, Years	Amount Injected, Cc.	Number Injected	For Three Weeks	For Three Months or More	For Three Weeks	For Three Months or More	Within Two Weeks	Within Two to Three Weeks	Within Three to Four Weeks	Within One to Three Months
1	0	2-5	9	16	14	14	88	88	2	0	0	0
2	½	2-5	6	57	51	34	89	59	4	2	14	2
4	1-3	2-5	6	85	59	33	70	38	7	19	6	18
	4½	1-3	10	16	12	5	75	31	0	4	1	6
				174	136	86	78	51	13	25	23	27

* Sixteen months have elapsed since the children of this group were inoculated, and no further cases of measles developed.

fourth to the seventh day of exposure to the disease. Ten cc. of plasma, collected four months after defervescence and injected on the ninth to the thirteenth day of exposure, failed to protect or to modify the measles in six children (table 3).

Ninety-five children were injected with from 5 to 7 cc. of unmodified whole blood, the equivalent of one-half the amount of serum set down by Degkwitz as the minimum requirement for protection. This blood was collected from the children in the institution who had a modified measles. Considering all whole blood that was used, varying in age from 6 days to 3 months after defervescence, 66 per cent of the children were protected for three weeks and 41 per cent for two months or more. Whole blood, collected from six to nine days after defervescence, protected in all cases for three weeks; two to three weeks whole blood protected 62 per cent; one to two months whole blood protected 71 per cent, and two to three months whole blood protected only 28 per cent. Whole blood collected up to three weeks after defervescence, in small amounts, protected half the children on reexposure. Fifty-six of a total of ninety-five children who were injected with whole blood contracted a mild modified form of measles. Although the amount of whole blood injected was not enough to protect, the antibodies sufficed to modify the measles, even when it developed two months after inoculation (table 4).

It is necessary to add a word of explanation in regard to the children who form the basis of the data in table 5. This table is intended to show the influence of the time of exposure on the protective value of whole blood of convalescents in small amounts. The group protected 100 per cent, in contradistinction to the other group, were not runabouts but were confined to cribs; they were younger children and received whole blood collected from six to nine days after defervescence. From 5 to 7 cc. of whole blood injected on the tenth to the thirteenth day of exposure to the disease failed to protect five children, and modified the measles in only one instance (table 5).

TABLE 3.—*Influence of Time of Exposure on Protective Value of Plasma of Convalescents* *

Period of Exposure Before Injection, Days	Number Injected	Number Protected for Three Weeks	Per Cent Protected for Three Weeks
4	71	57	80
5	68	50	74
6	15	11	73
7	29	18	80

* This includes all plasma that was used, varying in age from one to four months.

Nine children, from 1 to 2 years of age, were exposed to a case of measles developing in one of the isolation outbuildings soon after admission to the institution during June, 1925. We were very anxious to prevent further spread of the disease to the exposed children, so as not to interfere with transfer to the main building at the end of the usual three weeks period of isolation. Blood was collected from thirteen children who had had a modified measles six months previously. The blood was citrated and pooled, and 20 cc. was given to each child intramuscularly in the upper and inner quadrant of the buttocks on the fifth day of exposure. Isolation of the child with measles was attempted but was not absolute. None of the exposed children contracted measles.

One of the children during this epidemic, who was not protected by 6 cc. of plasma, had a definite relapse of measles. The relapse occurred within two weeks of the onset of the first attack. Definite Koplik spots were observed by one of us and by two other colleagues during both attacks. With the exception of a mild bronchitis during the relapse, the child made an uneventful recovery from both attacks.

No complications developed in any of the children from the beginning of the epidemic in July to the end of November. Bronchopnuemonia and otitis media complicated the measles during December and January. There was a considerable number of cases of bronchopneumonia in the institution at this time among children who had either been protected or had had measles during the early months of the epidemic. During this period, among 100 children with measles, there were only six instances of complicating bronchopneumonia and ten of otitis media. Five of the bronchopneumonia and eight of the otitis media cases occurred in children who had not received protective inoculation. It is probable that the modification of the measles, by the use of whole blood, was a factor in the lesser incidence of bronchopneumonia. There was no mortality in any of the children who developed measles during this epidemic. The only death was that of a child, who contracted measles after the onset of a severe recurrent bronchopneumonia.

TABLE 4.—*Data of Ninety-Five Children Injected with Whole Blood of Convalescents* *

			Number								
				Protected				Not Protected (Modified Measles)			
				Number		Per Cent		Onset			
Interval Between Defervescence and Collection of Blood	Ages of Children Injected, Years	Amount Injected, Cc.	Number Injected	For Three Weeks	For Two Months or More	For Three Weeks	For Two Months or More	Within Two Weeks	Within Two to Three Weeks	Within Three to Four Weeks	Within One to Two Months
From 6 to 9 days.....	½ to 1¼	5 to 7	18	18	17	100	94	0	0	1	0
From 2 to 3 weeks.....	1½ to 2	5 to 7	24	15	11	62	46	5	4	4	0
From 1 to 2 months....	1 to 3½	5 to 7	35	25	7	71	20	6	4	0	18
From 2 to 3 months....	2 to 5	5 to 7	18	5	4	28	22	8	5	1	0
			95	63	39	66	41	19	13	6	18

* One year has elapsed since the children of this group were inoculated, and no further cases have developed.

TABLE 5.—*Influence of Time of Exposure on Protective Value of Whole Blood of Convalescents* *

Period of Exposure Before Injection, Days	Interval Between Defervescence and Collection of Blood	Average Age of Children, Years	Number Injected	Number Protected for Three Weeks	Per Cent Protected for Three Weeks
4	½ to 3 months	2 to 3	77	45	58
5	6 to 9 days	1	18	18	100*

* These children, in contradistinction to the two other groups, were not runabouts but were confined to cribs.

A comparison between this and two previous epidemics in the institution, when no protective measures were undertaken, may be of interest. In 1912, there were numerous complicating cases of bronchopneumonia leading to twelve deaths. In 1917, there were 232 children with measles, among whom there were six deaths. These figures include only the mortality that occurred in the children kept at the institution. It was the custom at that time to transfer the severer cases of measles with bronchopneumonia to the New York City infectious disease hospitals. No record was kept of the mortality in these children. An idea, however, can be gleaned from the findings of Mixsell and Giddings,[18] who report 3,080 cases of measles in these hospitals; 826 of these patients had pneumonia, or one in every four. Four hundred and twenty-four of these, or 51 per cent, died.

CONCLUSIONS

1. It is difficult to procure a sufficient supply of blood of recent convalescents to cope with an epidemic of measles in an institution of fair size.

2. It is practical to bleed recent convalescents in small amounts to inject exposed children during an epidemic in an institution.

3. Plasma of convalescents, collected from one to four months after defervescence, and stored for four and one-half months before injection, protected 51 per cent of the children for three months or more.

4. Plasma of convalescents, collected one month after defervescence, protected 88 per cent of the children for three months or more.

5. Even when plasma of convalescents collected from one to four months after defervescence failed to protect, it modified the measles in 100 per cent of the children.

6. There was very little difference in the protective value of plasma injected from the fourth to the seventh day after exposure. When injected after the seventh day, it did not protect or modify the disease.

7. Whole blood in amounts of from 5 to 7 cc., collected up to three months after defervescence, protected 41 per cent for two months or more.

8. When whole blood collected up to three months after defervescence failed to protect, it modified the measles even when it developed two months after injection.

9. It is possible, but very rare, to have a relapse of measles within a month.

10. Considering the small amounts of plasma and whole blood that were used, an incidence of measles of 53 per cent in the children who were inoculated, as compared to 84 per cent in those who did not receive protective inoculation, is noteworthy.

11. The permanent immunity following the modification of measles is of benefit in an institution caring for children.

12. The decidedly lesser incidence of bronchopneumonia in the children who received protective inoculation, as compared to those who were not inoculated, and no mortality, were noticeable phenomena of this epidemic.

13. Convalescent blood is very valuable in institutions for infants and very young children, and in private families, where exposure to the disease is known. A real control can only be obtained by active immunization with either an attenuated virus or a toxin.

336 West Eighty-Eighth Street—47 Fort Washington Avenue.

18. Mixsell, H. R., and Giddings, E.: A Report of 3,080 Cases of Measles with Special Reference to Pneumonia, South. M. J. **16**: 90 (Feb.) 1923.

Clinical Notes, Suggestions and New Instruments

COMPLETE APHONIA FROM GOITER, WITH RECOVERY

S. L. BERNSTEIN, M.D., CLEVELAND

Dr. J. W. Shuman[1] has reported a case of aphonia from goiter, and quotes Coffey[2] as saying that he does not remember having had a case of aphonia that was relieved by the removal of a goiter, and Crile[2] as never having had a case of complete loss of voice with the exception of malignant cases.

The case reported here will substantiate Dr. Shuman's report.

Miss J. B., consulted me, Sept. 23, 1907, on account of her loss of voice for six months past. There was no pain or cough. The family and personal history were negative as to the complaint. Examination revealed a small adenoma of the thyroid gland on the right side. Laryngologic examination by the late Dr. A. H. Marvin and Dr. S. H. Monson showed a paralysis of the right vocal cord due to pressure from the goiter. The pulse rate was 104. The heart was normal in size and there was no murmur. There was no exophthalmos. Thyroid tablets and iodine ointment were used for three weeks, with a slight return of the voice. Dr. Monson reported that the vocal cord moved better but not quite to the central line. The pulse rate was 96. December 23, she had an exophthalmic goiter. The pulse rate was 107. There was tremor of the eyes and slight bulging. She was referred to Dr. Crile, December 26, who agreed in the diagnosis.

Jan. 4, 1908, thyroidectomy was performed by Dr. G. W. Crile at Lakeside Hospital. The postoperative history was uneventful.

March 12, she had complete return of her voice and no symptoms referable to exophthalmos. The vocal cord was in perfect condition. She enjoyed good health.

July 15, 1926, the patient stated that she was apparently in good health, her voice was perfect, and she had not had any illness since the operation. In view of the modern knowledge of thyroidism, it is interesting to note what effect thyroid extract and iodine had on a simple adenoma.

328 Anisfield Building.

ANGIONEUROTIC EDEMA OF PENIS AND SCROTUM

WILLIAM J. EZICKSON, M.D., PHILADELPHIA
Attending Urologist, U. S. Veterans' Bureau

A man, aged 34, white, married, with one child, suddenly developed itching of the penis and scrotum, June 20, 1926, followed by a burning sensation of the skin in that area. In about six hours he noticed a swelling of the scrotal sac and edema of the penis, which rapidly increased. In twelve hours there was a very marked edema of the entire penis and scrotum. There was no pain present, the only symptoms being an itching and heavy feeling of the scrotum.

Examination revealed a very distorted, edematous penis, and a greatly thickened, edematous scrotum. There was no history of extramarital exposure, and the last intercourse had taken place about four weeks previously. There was no history of exposure to any poisonous plants, weeds or chemicals.

No sore was present on penis or scrotum. There was no urethral discharge. The prostate and seminal vesicles were normal, as were the testes and epididymides. There was no enlargement of the inguinal glands. The urine was normal except for a very faint trace of albumin and a very few pus cells. The blood pressure was: systolic, 118; diastolic, 74.

The patient had had an attack of angioneurotic edema involving the tongue and pharynx, about three months before.

At noon, June 21, he was given 10 minims (0.6 cc.) of epinephrine hydrochloride, 1:1,000 solution, intramuscularly. Four hours later the edema began to disappear. Within six hours it had disappeared about 50 per cent, and within nine hours there was very little edema remaining. By the morning

1. Shuman, J. W.: Aphonia from Goiter, J. A. M. A. **86**: 1981 (June 26) 1926.
2. Personal communication to Dr. Shuman.

of June 22, twenty hours after the injection of the epinephrine, the penis and scrotum were normal.

Occasionally cases of acute edema of the genitalia present themselves to the physician, the exact cause of which may be undertermined. I believe that these cases are all a manifestation of an angioneurotic edema, which will respond immediately to one or two intramuscular injections of epinephrine.

This is the second case of this type that I have seen. The other patient also responded immediately to the epinephrine.

1922 Spruce Street.

Special Articles

INSPECTIONS OF INTERN HOSPITALS

A REPORT OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Until recently, hospitals had not reached the stage in regard either to numbers or to development, at which it was thought to be necessary to have them visited by inspectors sent out by the American Medical Association. Such inspections as have been necessary have been well made by voluntary committees appointed by the various state medical societies.

The development of hospitals during the last twenty years has been no less remarkable than that of medical education and practice. Hospitals have increased in numbers from less than 3,000 in 1906 to 6,896 in 1925. The bed capacity also has increased from about 300,000 in 1906 to 837,000 in 1925.

HOSPITALS FOR INTERN TRAINING

The first list of hospitals providing internships was published in 1914 and included not only general but also special hospitals and hospitals for nervous and mental diseases—all institutions, in fact, that were willing to use recent graduates as interns. All the hospitals on the list had been recommended by state advisory committees, and only the notoriously unfit or unethical hospitals were eliminated.

By 1918, through publicity and the work of the several agencies interested in hospitals, much progress had been made in hospital improvement, and the Council prepared a schedule outlining definite standards for intern training. Early in 1919, therefore, the first tentative schedule of "Essentials of a Hospital Approved for Internships" was published and the hospitals which were less capable of providing internships, or which were using interns merely as orderlies, were eliminated from the Council's list. The list published in 1920 continued to list special hospitals as acceptable for interns, although these hospitals were urged to secure as residents those who had previously completed internships in general hospitals.

In 1920 the duties of the Council on Medical Education were enlarged by the House of Delegates to include all the hospital activities of the Association. In 1920, also, a complete survey, begun in the previous year, was completed. By means of a questionnaire, information was obtained which was verified later by the state hospital committees. All teaching hospitals were inspected during the inspection of medical schools, and most of the other hospitals were inspected or recommended by the state committees.

OPPORTUNITY FOR SELECTION OF HOSPITALS

In 1914 there were not enough hospitals willing to use interns to provide places for all medical graduates, and there was no opportunity for selection or for insisting on better clinical teaching. By 1920, however, largely because of the higher qualifications of students being graduated, the number of hospitals seeking interns had become so large that all demands for interns could not be supplied even if the size of the classes graduating had been doubled. This gave the Council the opportunity of limiting its approval to hospitals that were found to be providing a better and more acceptable intern training.

SEPARATION OF SPECIAL FROM GENERAL HOSPITALS

In 1923, when the Council established a list of approved graduate medical schools, it also prepared a list of hospitals in which approved residencies in the specialties were given. Since that year only general hospitals have been approved for interns. Such of the special hospitals as were found to be educationally qualified and which were willing to admit as residents only those who have already completed internships in general hospitals were included among hospitals approved for residencies in the specialties. By 1923, also, through the better knowledge that had been secured regarding all hospitals, only those which were fairly well equipped both educationally and professionally were retained among the hospitals approved for intern training.

INCREASED IMPORTANCE OF THE HOSPITAL INTERNSHIP

With the recent developments in medical education, the hospital internship has become increasingly important. At present, it not only rounds out the student's fundamental medical training but also occupies a place between undergraduate and graduate medical instruction. This makes it necessary that hospitals in which interns are to be trained shall develop a better routine of clinical instruction. The internship now constitutes an additional or fifth year of higher clinical instruction in which the recent graduate[1] still works under the supervision and instruction of competent physicians. Indeed, the internship is now perhaps the most important part of the student's clinical instruction, differing from the work of his third and fourth medical years only in his being granted a larger degree of individual responsibility.

SIZE LIMIT FOR INTERN HOSPITALS

In 1924, as the educational character of internships became of greater importance, the Council passed a ruling limiting hospitals approved for the training of interns to those having 100 beds or more, and having a daily average of seventy-five or more patients. With certain possible but very rare exceptions, it is these larger hospitals which have the properly organized staffs and can provide the interns with a broad training in all varieties of medical practice. A hospital which deals mainly with a specialty is no longer eligible for the general training of interns but, if educationally qualified, may be approved for residencies in the hospital's special field.

PROVISION FOR HOSPITAL INSPECTIONS

By 1924, the hospitals had reached a higher stage of development than at any previous time, and more expert and careful inspections were deemed necessary so that hospitals could be judged with a greater degree of fairness. The Council believed, therefore, that the time

1. Twelve medical colleges are now requiring that the internship be completed before the M.D. is granted. [See list on page 589.]

had come when all hospitals approved for intern training should be more uniformly inspected, such as could be best done by some representative of the American Medical Association working in cooperation with the state hospital committees. In order to provide for such inspections, the Council, a year ago, asked for an increased appropriation, and this was granted by the Board of Trustees last February. It is contemplated that hereafter every hospital will be duly inspected by a representative of the Council before it is approved for the training of interns. Under this arrangement, also, the Council can keep in closer touch with the various state committees on medical education and hospitals.

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

BERNARD FANTUS, M.D.
Associate Clinical Professor of Medicine, Rush Medical College
CHICAGO

(Continued from page 491)

LIMITATIONS OF INTRAVENOUS THERAPY

It must be borne in mind that the blood is a fluid tissue of most delicate physical and chemical equilibrium. Water or markedly hypotonic solutions injected intravenously cause destruction of red blood corpuscles (laking) which, if sufficiently extensive, results in chill, fever and sweat, a paroxysm like that of malaria due, essentially, to the same cause; namely, poisoning with blood destruction products. Hence, unless parenteral alterative therapy or osmotherapy is aimed at, injections to be made into the blood stream should be as nearly isotonic with the blood as possible. To be strictly isotonic, sodium chloride solution should be about 0.9 per cent. It may vary between 0.6 and 0.9 per cent without any reaction being produced by reason of anisotonicity. A little reflection will show that this so-called physiologic sodium chloride solution is not really physiologic: for it differs, excepting as regards osmotic tension, enormously in its composition from the blood. More nearly physiologic as far as ion equilibrium is concerned are such solutions as Ringer's or Locke's. Even these, when introduced into the blood in large quantity, cause blood dilution and other changes in ion equilibrium and state of blood colloids that cannot be regarded as innocuous. Still, in the quantities in which these solutions are used therapeutically they must be considered—compatible blood itself excepted—as our least objectionable diluting fluids for vein injections and infusions.

Soon after the use of intravenous injection on a large scale was commenced, it was discovered that the quality of the water employed in the making of the solutions was of importance in the production of unfavorable, chiefly febrile, reactions. It is most especially to the work of Wechselmann [160] that we owe the knowledge that toxic reaction may occur not only from insufficiently sterilized physiologic sodium chloride solution, but even from such solution made from sterilized water that has been kept for some time; and Wechselmann believed the contamination to be bacterial. It may seem surprising that distilled water may serve as a culture medium for micro-organisms; but such is the case, and remarkably minute quantities of bacterial protein suffice, as has been shown by Seibert,[161] to produce fever. It is asserted, however, that reactions may also be produced from distilled water that has had the opportunity to dissolve on standing such metals as lead, copper, nickel, or zinc (Emery, Sicard and Leblanc). Matzenauer has shown that enough alkali may be dissolved out of ordinary glass to produce toxic results. Hence only hard glass, such as Jena glass, should come in prolonged contact with distilled water to be used for intravenous injection; and, to avoid subsequent bacterial contamination, it should be kept hermetically sealed in ampules, now on the market, as demonstrated by Dreyfus,[162] or else prepared just before use.

The fact must not be lost sight of that agents ordinarily inert may become endowed with toxicity when injected intravenously, and that the ordinary pharmacologic action of substances may become overshadowed by the result of blood changes, as has been shown by numerous observers, most systematically perhaps by Hanzlik and his collaborators.[163] The intravenous injection of suspensions in 0.9 per cent sodium chloride solution of such insoluble bodies as barium sulphate or of fullers' earth causes violent reactions and death; and it seems that highly dispersed, almost colloidal bodies are more toxic than if injected as coarser precipitates. Emulsoid colloids, such as agar, acacia and gelatin, are capable of causing on intravenous injection even in dilute solutions profound blood changes, violent symptoms, and death.

The serums of many of the lower animals produce hemolysis in human blood. Even human blood serum may dissolve or agglutinate human blood corpuscles. Hence the necessity for careful selection and testing of the donor in blood transfusion. On the fact that foreign protein is pyrogenic and irritating to the system is based parenteral alterative therapy.

Definite changes in the blood are produced by hypertonic solutions of sodium chloride, 10 per cent; methenamine, 40 per cent, and urea, 18 per cent. On the other hand, calcium chloride, 9 per cent solution, seems relatively harmless. Slight or no changes are produced by sucrose, 85 per cent, or dextrose, 50 per cent. On the use of the latter chiefly is based "intravenous osmotherapy."

Ions may display an entirely different effect when injected intravenously than when given perorally. Thus, while it makes little difference whether we give potassium or sodium salts, by mouth, potassium is a neuromuscular depressant on vein injection, while the sodium ion is relatively harmless. That calcium, which is practically harmless by mouth, is liable to be toxic on intravenous injection has already been mentioned. Magnesium ions when swallowed are cathartic, because of nonabsorption; when given intravenously they depress the nervous system to such an extent that vein infusion of magnesium sulphate, 5 per cent solution in quantities of 30 cc. or more, has been used with some success as an antispasmodic in tetanus.

* This is the thirty-fourth of a series of articles on "The Technic of Medication." When completed, the articles will be assembled in book form.

160. Wechselmann: München. med. Wchnschr., 1911, p. 1510; Berl. klin. Wchnschr., 1914, no. 7.

161. Seibert, Florence B.: Fever Producing Substances Found in Some Distilled Waters, Am. J. Physiol. **67**: 90 (Dec.) 1923.

162. Dreyfus, G. L.: Steriles, daucernd haltbares "Ampullenwasser" für intravenöse Salvarsan Injectionen, München. med. Wchnschr. **67**: 95 (Jan. 23) 1920.

163. Hanzlik, P. J.; DeEds, F., and Tainter, M. L.: "Blood and Symptomatic Changes Following the Intravenous Administration of a Variety of Agents and Solutions," Ann. Report. Therap. Research Com., A. M. A., Vol. 14, 1925, p. 25.

Emboli, to be dangerous, must be present in the circulation in rather large quantities. Small quantities have been introduced without appreciable ill effect. A sufficiently large shower of emboli is followed by cyanosis, dyspnea, cough, and weak and rapid pulse. Though, of course, prevention of air embolism is a part of the technic of vein injection, Larned [164] has shown that the danger of air embolism has been grossly exaggerated. That the danger from oil embolism is real may be learned from the report by Fabricius-Møller [165] of two fatal cases after vein injection of 5 cc. and even of 1 cc. of camphorated oil. Intravenous injection of emulsions, such as milk, is likewise not permissible because of embolism. Protein precipitants, such as copper sulphate or mercuric chloride, produce violent reactions because of embolism when injected intravenously. Though the latter has been employed therapeutically by vein injection in small dosage, mercuric oxycyanide (obtainable in ampules containing 0.016 Gm.) is safer, as it does not act on protein to the same extent; but even its solution is better mixed with blood by aspirating some of it into the syringe and then injecting the mixture.

Anaphylaxis is to be dreaded most especially in the treatment of allergic persons. Hence in asthmatic and other allergic patients, intravenous injection should, if possible, be avoided. Before proteins, such as antitoxic serums, are injected into veins, especially in persons who have previously been given serum injections, it is always best to test for hypersusceptibility by endermic instillation of a small amount. If a wheal appears within half an hour, intravenous injection should be abandoned, or else desensitization practiced by subcutaneous injection of a very minute amount, say 0.025 cc., and doubling the dose every half hour until 1 cc. is given. Then 0.1 cc. is injected intravenously, and this dose is doubled every half hour until the desired quantity has been administered. To combat anaphylactic symptoms promptly, the physician should be ready to inject instantly 0.5 cc. of epinephrine solution.

Definite contraindications to voluminous vein infusion are dropsy, pulmonary edema and marked cardiac insufficiency. Whenever one is doubtful of the integrity of the myocardium, the quantity of fluid infused must be limited so as to avoid overloading the right heart. An almost constant premonitory symptom of acute dilatation of the heart is a dry cough, which should be heeded as a danger signal, as is also the appearance of pulmonary râles.

In view of all these risks and limitations, even the most ardent advocates of intravenous therapy ought to agree on the proposition that the intravenous administration of a remedy is not justifiable if satisfactory results can be secured from giving it by some other channel.

INTRACARDIAC INJECTION

This method of appeal to a failing heart, discovered about fifty years ago by Schiff, a German physiologist, constitutes the most powerful and prompt form of heart stimulation known, and therefore deserves serious consideration.

Vogt [166] reports fifteen successful cases, in some of which there had been respiratory standstill for five minutes, and in one case even fifteen minutes; and Bodon [167] was able to report ninety cases, with lasting results in twenty-three patients. Since then there have been reports of a considerable number of additional instances of successful employment of this procedure. Intracardiac injection is the simplest and most certain method to cause the motor of the circulatory apparatus to resume motion and to effect resuscitation. The fact that the heart is "the first to move, the last to die" gives it its justification. It has been shown experimentally that the limit of recovery lies not so much with the heart as with the more sensitive brain, which does not tolerate circulatory standstill for more than a few minutes. Hence the importance of acting immediately and resolutely in any case of sudden cessation of the heart beat, if the other organs are still in fairly good functional condition.

The chief remedy for intracardial injection is epinephrine, the effect of which on the heart is nothing less than wonderful. This drug was used in nine of Vogt's fifteen successful cases. Quite as important as its effect is its harmlessness, even when injected into the heart muscle itself. This cannot be said of other circulatory stimulants, such as camphor, caffeine, digitalis or strophanthin, all of which are liable to injure the muscle into which they are injected. A dose of 1 cc. is generally considered a maximum, though as much as 5 cc. has been employed. Next in value is the solution of pituitary, which, though feebler in action, is possibly safer in cases of arteriosclerosis, myocardial degeneration, the heart of hypersensitive thyrotoxic patients and in nephroses.

The following technic is advised: Injection is made into the fourth or fifth intercostal space just to the left of the sternum. After iodine disinfection, the needle is inserted at the upper margin of the fifth rib, starting along the edge of the sternum until its posterior surface is reached. Now its point is turned toward the midline as it is pushed through the heart until the resistance of the heart muscle ceases suddenly. Entrance into the heart is indicated by the appearance of blood in the syringe. The imparting to the needle of even feeble motion by the heart is a favorable sign. To avoid pneumothorax and pneumopericardium, the needle is to be inserted and withdrawn while attached to the syringe; and when, as is nearly always the case, this injection is done during artificial respiration, it should be performed in the expiratory phase.

(To be continued)

164. Larned, E. R.: Surg. Gynec. Obst., December, 1905.
165. Fabricius-Møller: Ugesk. f. Læger **85**: 393 (May 31) 1923.
166. Vogt, E.: München. med. Wchnschr. **68**: 732 (June 17) 1921.
167. Bodon, Carl: Intracardiac Injection of Adrenalin, Lancet **1**: 586 (March) 1923.

Bacillus Acidophilus and Surface Tension.—A recent report, which appeared in THE JOURNAL, shows that the value of *Bacillus acidophilus* therapy is still an open question and that one of the uncertain factors is the identity of the organism itself. *Bacillus acidophilus* resembles similar organisms, with some of which implantation in the intestine cannot be secured. Of this innocuous group, *Bacillus bulgaricus* is the most widely known and is one of the most difficult to differentiate from *Bacillus acidophilus*. A method of identification recently described by Albus and Holm (*J. Bacteriol.* **11**:13 [July] 1926) depends on the effect of surface tension. It was found that, with sodium ricinoleate as the depressant, growth of *Bacillus bulgaricus* was inhibited at a surface tension lower than 40 dynes, whereas *Bacillus acidophilus* grew well in the same mediums depressed to 36 dynes. The authors suggest, that it is the surface tension depressant effect of bile salts that makes possible implantation of *Bacillus acidophilus* in the intestine.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1926 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The statistics herewith presented for the year ending June 30, 1926, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the kind courtesy and cooperation of the officers of the colleges who have made the compilation of these statistics possible.

STATISTICS OF COLLEGES

Table 1, pages 566, 567, gives the colleges in session during 1925-1926; the population of the city; the rating given to the college by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1926 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 574 are given the essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, pages 568, 569, shows from what states the students came who were in attendance at each medical college during the session of 1925-1926. The influence of the proximity of the medical school is seen in the fact that the states having medical colleges contribute larger numbers of students than those which have no medical colleges. This is shown by the dark zone of figures running diagonally down the page. It will be interesting to compare this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,576. Pennsylvania contributed 1,457, and Illinois, 1,350. The next states, in the order of the number contributed, are: Ohio, 1,070; Massachusetts, 771; Texas, 686; Michigan, 684, and California, 612. Of the twelve states that have no medical schools, four furnished more than 100 students, these being New Jersey, 579; Washington, 129; Florida, 127, and Rhode Island, 101. Of these non-college states, Wyoming had only 13; Nevada, 12, and New Mexico, 9. There were 131 students from Hawaii, Porto Rico and the Philippine Islands, and 379 students from foreign countries. The average enrolment of foreign students each year since the World War has been 322.

NUMBER OF STUDENTS BY CLASSES

In table 3, page 570, the students enrolled in each college are shown by classes. The total attendance for the first year was 5,753, or 261 more than last year, and 593 more than in 1924. The second year attendance was 4,779, or 364 more than last year and 338 more than in 1924. The third year attendance was 4,201, or 65 more than last year but 129 less than in 1924. The enrolment of the fourth year class was 4,107, or 50 less than last year and 310 more than in 1924.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (table 4) in the United States for the year ending June 30, 1926, excluding premedical, special and postgraduate students, was 18,840, an increase of 640 over last year. This is the largest enrolment of students since 1911. There has been a steady increase in enrolment since 1919. Of the total number of students last year, 18,092 were in the nonsectarian (regular) colleges, 458 at the two remaining homeopathic colleges, 253 at the two remaining eclectic colleges, and 37 at the one nondescript college. The Middlesex College of Medicine and Surgery definitely states in its current announcement that it is an eclectic school.

TABLE 4.—*Medical College Attendance*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1880	9,776	1,220	830	...	...	11,826
1890	13,521	1,164	719	...	...	15,404
1900	22,710	1,909	852	...	...	25,171
1904	23,662	1,309	1,014	123	224	26,143
1910	20,136	867	455	49	19	21,526
1911	18,414	880	433	49	...	19,786
1912	17,277	827	308	...	...	18,412
1913	15,919	850	256	...	...	17,015
1914	15,488	794	270	...	...	16,502
1915	13,914	736	241	...	...	14,891
1916	13,121	688	283	...	...	14,012
1917	12,925	580	250	...	...	13,764
1918	12,727	540	138	...	225	13,630
1919	12,137	397	86	...	310	12,930
1920	12,930	386	93	...	389	13,798
1921	13,627	440	98	...	301	14,466
1922	14,742	517	85	...	291	15,635
1923	16,299	341	99	...	221	16,990
1924	17,034	379	127	...	188	17,728
1925	17,652	410	148	...	...	18,200
1926	18,092	458	253	...	37	18,840

NUMBER OF MEDICAL GRADUATES

The total number of graduates (table 5) for the year ending June 30, 1926, was 3,962, or 12 less than last year. The total would have been 4,037, but two medical schools, the College of Medical Evangelists and the Chicago Medical School, withhold graduation from their fourth year classes until a year's internship has been completed. The number of graduates from the nonsectarian colleges this year was 3,801, or 55 less than last year. The number from the homeopathic colleges was 80, the same as last year, and from the eclectic colleges there were 64, or 26 more than last year. The number of graduates from the nondescript or semi-osteopathic college was 17.

(Continued on page 570)

1. State Board Number, J. A. M. A. 86: 1534-1541 (May 15) 1926.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City or College Location (Census Bureau Estimate of 1925)	Classification by Council on Medical Education	No. of Students Registered 1925-26		Graduates 1926		Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1926-27		Marginal Number
				Men	Women	Men	Women			1st Year	2d Year	3d Year	4th Year		Begins 1926	Ends 1927	
	ALABAMA			106	1	..	..	..									
1	University of Alabama School of Medicine, University (Tuscaloosa)*	18,083	A	106	1	..	..	14	35	222	222	...	...	Clyde Brooks, M.D., Dean	Sept. 13	May 31	1
	ARKANSAS			155	1	24	..	16									
2	University of Arkansas Medical Department, Little Rock [1]	74,216	A	155	1	24	..	16	58	34	85	90	75	100	Morgan Smith, M.D., Dean	Sept. 16	June 2	2
	CALIFORNIA			846	70	66	12	64									
3	College of Medical Evangelists, Los Angeles [2]	576,673	A	233	25	5	1	9	163	36	236	233	316	286	Percy T. Magan, M.D., Dean	Sept. 6	May 29	3
4	Stanford University School of Medicine, San Francisco	557,530	A	143	16	23	4	27	178	34	261	261	261	261	William Ophüls, M.D., Dean	Oct. 1	June 15	4
5	University of California Medical School, San Francisco [1]	557,530	A	109	38	41	7	35	236	36	290	248	245	225	L. S. Schmitt, M.D., Dean	Aug. 13	May 11	5
	COLORADO			156	13	32	5	17									
6	University of Colorado School of Medicine, Denver [1]	280,911	A	156	13	32	5	17	78	34	206	221	195	185	Maurice H. Rees, M.D., Dean	Sept. 27	June 10	6
	CONNECTICUT			190	6	47	2	39									
7	Yale University School of Medicine, New Haven	178,927	A	190	6	47	2	39	187	34	305	300	300	320	Milton C. Winternitz, M.D., Dean	Sept. 30	June 15	7
	DISTRICT OF COLUMBIA			798	16	142	2	67									
8	Georgetown University School of Medicine, Washington	497,906	A	276	..	43	..	25	126	33	255	250	250	260	George M. Kober, M.D., Dean	Sept. 27	June 8	8
9	George Washington University Medical School, Washington	497,906	A	258	11	45	1	10	166	33	319	316	316	316	William C. Borden, M.D., Dean	Sept. 27	June 8	9
10	Howard University School of Medicine, Washington	497,906	A	222	5	54	1	32	60	34	213	208	208	215	Edward A. Balloch, M.D., Dean	Oct. 4	June 17	10
	GEORGIA			237	6	80	1	58									
11	Emory University School of Medicine, Atlanta	222,963	A	182	..	57	..	41	130	33	253	233	228	258	Russell H. Oppenheimer, M.D., Dean	Sept. 29	June 7	11
12	University of Georgia Medical Department, Augusta [1]	55,245	A	180	5	23	1	9	62	33	105	100	100	100	William H. Goodrich, M.D., Dean	Sept. 27	June 4	12
	ILLINOIS			1865	107	436	21	345									
13	Chicago Medical School, Chicago [3]	2,995,239	C	137	10	31	1	9	110	42	270	280	305	345	Bayard Holmes, Jr., M.D., Dean	Oct. 4	Aug. 20	13
14	Loyola University School of Medicine, Chicago	2,995,239	A	535	14	62	1	45	113	33	300	300	300	300	Louis D. Moorhead, M.D., Dean	Oct. 4	June 11	14
15	Northwestern University Medical School, Chicago	2,995,239	A	415	..	112	..	58	208	35	300	300	300	300	Irving S. Cutter, M.D., Dean	Oct. 1	June 20	15
16	Rush Medical College (University of Chicago)	2,995,239	A	482	56	130	11	137	237	34	280	270	290	297	Ernest E. Irons, M.D., Dean	Oct. 1	June 14	16
17	University of Illinois College of Medicine, Chicago [1]	2,995,239	A	466	27	101	6	96	208	38	165	165	165	165	David John Davis, M.D., Dean	Oct. 4	June 11	17
	INDIANA			966	11	78	1	78									
18	Indiana University School of Medicine, Bloomington-Indianapolis [1]	358,819	A	366	11	79	1	78	200	36	175	175	175	175	Charles P. Emerson, M.D., Dean	Sept. 13	June 8	18
	IOWA			389	13	71	2	52									
19	State University of Iowa College of Medicine, Iowa City [1]	11,691	A	389	13	71	2	52	80	34	186	186	186	186	Lee Wallace Dean, M.D., Dean	Sept. 20	June 6	19
	KANSAS			166	13	33	4	27									
20	University of Kansas School of Medicine, Lawrence-Kansas City [1] *	452,262	A	166	13	33	4	27	116	36	125	100	106	110	Harry Roswell Wahl, M.D., Dean	Sept. 14	June 6	20
	KENTUCKY			255	5	59	..	30									
21	University of Louisville School of Medicine, Louisville	250,250	A	255	5	59	..	30	112	37	275	275	280	300	Stuart Graves, M.D., Dean	Sept. 13	June 16	21
	LOUISIANA			383	15	80	3	45									
22	Tulane University of Louisiana School of Medicine, New Orleans	414,468	A	383	15	80	3	45	141	34	295	285	270	300	Charles C. Bass, M.D., Dean	Sept. 23	June 8	22
	MARYLAND			805	38	130	7	101									
23	Johns Hopkins University School of Medicine, Baltimore	796,296	A	239	33	62	5	67	255	33	410	410	410	410	Lewis H. Weed, M.D., Dean	Sept. 27	June 7	23
24	University of Maryland Sch. of Med. and Coll. of P. & S., Baltimore [1]	796,296	A	566	5	68	2	34	208	33	280	280	280	280	J. M. H. Rowland, M.D., Dean	Sept. 27	June 4	24
	MASSACHUSETTS			1272	84	303	19	154									
25	Boston University School of Medicine, Boston	781,529	A	179	21	45	4	24	113	36	226	226	226	336	Alexander S. Begg, M.D., Dean	Sept. 20	June 13	25
26	College of Physicians and Surgeons, Boston [2]	781,529	C	26	2	7	2	..	32	..	125	155	125	120	.....	.....	.....	26
27	Harvard University Medical School, Boston	781,529	A	507	..	128	..	110	332	36	305	300	300	300	David L. Edsall, M.D., Dean	Sept. 27	June 23	27
28	Tufts College Medical School, Boston	781,529	A	453	29	98	12	14	170	35	305	300	300	310	Stephen Rushmore, M.D., Dean	Sept. 23	June 11	28
29	Middlesex College of Medicine and Surgery, Cambridge.—E.	120,053	C	107	2	25	1	..	..	..	185	175	175	175	.....	.....	.....	29
	MICHIGAN			701	39	153	9	60									
30	University of Michigan Medical School, Ann Arbor [1] *	93,178	A	506	35	105	7	56	92	36	192	187	187	185	Hugh Cabot, M.D., Dean	Sept. 28	June 20	30
31	Detroit College of Medicine and Surgery, Detroit [1]	1,242,044	A	195	4	48	2	4	143	35	200	200	200	200	W. H. MacCraken, M.D., Dean	Sept. 30	June 18	31
	MINNESOTA			863	26	88	8	96									
32	University of Minnesota Medical School, Minneapolis [1]	425,435	A	363	26	88	8	96	341	34	192	192	192	192	Elias P. Lyon, M.D., Dean	Sept. 27	June 11	32
	MISSISSIPPI			63	1	..	..	..									
33	University of Mississippi School of Medicine, University (Oxford)* [1]	2,150	A	63	1	..	..	17	36	163	163	...	...	Joseph O. Crider, M.D., Dean	Sept. 15	June 7	33
	MISSOURI			956	30	211	4	135									
34	University of Missouri School of Medicine, Columbia* [1]	10,634	A	75	5	..	..	29	35	110	113	...	...	Guy L. Noyes, M.D., Dean	Sept. 15	June 4	34
35	Kansas City University of Phys. and Surgs., Kansas City.—M.* [1]	488,262	C	37	..	17	..	17	..	200	200	200	200	.....	.....	.....	35
36	St. Louis College of Physicians and Surgeons, St. Louis	821,543	C	47	8	14	2	..	..	210	205	205	230	.....	.....	.....	36
37	St. Louis University School of Medicine, St. Louis	821,543	A	502	..	107	..	63	240	33	325	325	325	325	Hanau W. Loeb, M.D., Dean	Oct. 1	June 1	37
38	Washington University School of Medicine, St. Louis	821,543	A	295	14	73	2	42	180	34	349	344	344	349	McKim Marriott, M.D., Dean	Sept. 23	June 7	38
	NEBRASKA			454	14	102	1	83									
39	Creighton University School of Medicine, Omaha	211,768	A	192	2	33	..	32	78	33	230	215	215	215	Hermann von W. Schulte, M.D., Dean	Sept. 23	June 2	39
40	University of Nebraska College of Medicine, Omaha	211,768	A	262	12	69	1	51	112	33	165	170	160	160	J. Jay Keegan, M.D., Dean	Sept. 20	June 4	40

	NEW HAMPSHIRE			35	..	..	..	..										
41	Dartmouth Medical School, Hanover [7]	1,551	A	35	..	..	..	..	15	36	400	410	....	....	Colin C. Stewart, Ph.D., Act. Dean	Sept. 22	June 21	41
	NEW YORK			2870	164	446	35	252										
42	Albany Medical College, Albany	117,220	A	88	5	16	..	6	100	34	220	305	305	305	Thomas Ordway, M.D., Dean	Sept. 28	June 13	42
43	University of Buffalo Medical Department, Buffalo	536,016	A	244	11	45	2	9	162	34	327	317	317	327	C. Sumner Jones, M.D., Dean	Sept. 20	June 8	43
44	Columbia University College of Phys. and Surgs., New York City	5,927,625	A	345	55	95	11	51	434	33	527	516	512	532	William Darrach, M.D., Dean	Sept. 22	June 1	44
45	Cornell University Medical College, New York City	5,927,625	A	239	41	54	9	62	200	34	510	500	500	525	Walter L. Niles, M.D., Dean	Sept. 27	June 9	45
46	Long Island College Hospital, New York City-Brooklyn	2,156,687	A	382	12	88	2	40	186	33	443	416	435	440	Adam M. Miller, A.M., Dean	Sept. 27	May 6	46
47	New York Homeopathic Medical College and Flower Hospital.—H	5,927,625	B	205	9	38	3	1	107	31	430	405	395	410	Claude A. Burrett, M.D., Dean	Sept. 15	May 7	47
48	University and Bellevue Hospital Medical College, New York City	5,927,625	A	390	19	83	5	44	226	36	535	533	512	530	Samuel A. Brown, M.D., Dean	Sept. 23	June 8	48
49	University of Rochester School of Medicine, Rochester	316,786	A	20	2	..	..	..	95	35	300	300	300	300	George H. Whipple, M.D., Dean	Sept. 23	June 20	49
50	Syracuse University College of Medicine, Syracuse	182,008	A	162	11	37	3	9	141	36	330	330	330	340	Herman G. Weiskotten, M.D., Dean	Sept. 17	June 13	50
	NORTH CAROLINA			118	2	..	..	..										
51	University of North Carolina School of Medicine, Chapel Hill*	1,488	A	78	2	..	..	..	9	34	220	220	....	....	I. H. Manning, M.D., Dean	Sept. 17	June 2	51
52	Wake Forest College School of Medicine, Wake Forest*	1,425	A	40	..	..	..	..	18	35	208	208	....	....	Thurman D. Kitchin, M.D., Dean	Sept. 14	June 3	52
	NORTH DAKOTA			50	1	..	..	..										
53	Univ. of North Dakota School of Med., University (Grand Forks)* [1]	14,811	A	50	1	..	..	..	15	36	60	60	....	....	Harley E. French, M.D., Dean	Sept. 18	June 14	53
	OHIO			901	41	208	12	132										
54	Eclectic Medical College, Cincinnati.—E	409,333	B	143	1	37	1	7	44	32	220	210	210	210	Rolla L. Thomas, M.D., Dean	Sept. 16	May 16	54
55	University of Cincinnati College of Medicine	409,333	A	344	14	50	5	24	206	35	378	378	350	380	Arthur C. Bachmeyer, M.D., Dean	Sept. 27	June 18	55
56	Western Reserve University School of Medicine, Cleveland	936,455	A	205	15	45	3	48	179	34	325	310	300	310	Carl A. Hamann, M.D., Dean	Sept. 30	June 16	56
57	Ohio State University College of Medicine, Columbus [2]	279,836	A	309	11	73	3	44	111	34	180	180	180	180	Eugene F. McCampbell, M.D., Dean	Sept. 28	June 14	57
	OKLAHOMA			155	10	38	2	35										
58	University of Oklahoma School of Medicine, Norman-Oklahoma City [1]	101,150	A	155	10	38	2	35	80	35	80	75	25	25	LeRoy Long, M.D., Dean	Sept. 16	June 7	58
	OREGON			215	9	47	2	30										
59	University of Oregon Medical School, Portland [1]	282,383	A	215	9	47	2	30	156	34	200	195	190	190	Richard B. Dillehunt, M.D., Dean	Sept. 28	June 13	59
	PENNSYLVANIA			1717	132	462	41	223										
60	Hahnemann Medical College and Hospital of Philadelphia.—H	1,979,364	A	244	..	39	..	15	122	33	325	325	325	325	William A. Pearson, M.D., Dean	Sept. 27	June 2	60
61	Jefferson Medical College of Philadelphia	1,979,364	A	579	..	144	..	57	180	34	335	325	325	325	Ross V. Patterson, M.D., Dean	Sept. 22	June 3	61
62	Temple University School of Medicine, Philadelphia	1,979,364	B	232	1	51	..	4	134	36	295	280	280	280	Frank C. Hammond, M.D., Dean	Sept. 21	June 16	62
63	University of Pennsylvania School of Medicine, Philadelphia [4]	1,979,364	A	456	17	126	7	92	236	35	420	420	420	420	William Pepper, M.D., Dean	Sept. 24	June 15	63
64	Woman's Medical College of Pennsylvania, Philadelphia	1,979,364	A	....	100	..	29	21	74	33	255	275	250	260	Martha Tracy, M.D., Dean	Sept. 29	June 8	64
65	University of Pittsburgh School of Medicine, Pittsburgh	631,563	A	215	14	42	5	34	163	35	328	313	313	323	Raleigh R. Huggins, M.D., Dean	Sept. 20	June 8	65
	SOUTH CAROLINA			140	7	35	3	16										
66	Medical College of the State of South Carolina, Charleston	73,125	A	140	7	35	3	16	60	33	175	175	175	175	Robert Wilson, M.D., Dean	Sept. 23	June 2	66
	SOUTH DAKOTA			35	1	..	..	..										
67	University of South Dakota College of Medicine, Vermillion*	2,590	A	35	1	..	..	..	11	35	100	100	....	....	George R. Albertson, M.D., Act. Dean	Sept. 15	June 6	67
	TENNESSEE			634	7	145	1	72										
68	University of Tennessee College of Medicine, Memphis [1]	174,533	A	227	4	66	1	22	152	35	182	127	127	152	Orren W. Hyman, Ph.D., Admin. Officer	Sept. 27	June 16	68
69	Meharry Medical College, Nashville	136,220	A	224	1	47	..	28	45	32	173	165	165	185	John J. Mullowney, M.D., President	Oct. 1	May 25	69
70	Vanderbilt University School of Medicine, Nashville	136,220	A	183	2	52	..	27	148	34	215	215	215	240	G. Canby Robinson, M.D., Dean	Sept. 22	June 8	70
	TEXAS			476	26	101	7	59										
71	Baylor University College of Medicine, Dallas	194,450	A	264	14	37	2	20	108	32	268	258	248	248	Walter H. Moursund, M.D., Dean	Oct. 1	May 30	71
72	University of Texas School of Medicine, Galveston [1]	48,375	A	212	12	64	5	39	50	32	198	173	175	173	Henry Hartman, M.D., Act. Dean	Oct. 1	May 31	72
	UTAH			47	..	..	..	..										
73	University of Utah School of Medicine, Salt Lake City*	130,940	A	47	..	..	..	..	18	33	150	150	....	....	Ralph O. Porter, M.D., Dean	Sept. 27	June 6	73
	VERMONT			96	8	24	2	10										
74	University of Vermont College of Medicine, Burlington [1 6]	24,089	A	96	8	24	2	10	40	36	245	245	245	245	James N. Jenne, M.D., Dean	Sept. 15	June 16	74
	VIRGINIA			569	14	121	5	49										
75	Medical College of Virginia, Richmond	186,403	A	334	8	78	3	21	141	34	295	295	286	316	Manfred Call, M.D., Dean	Sept. 14	May 31	75
76	University of Virginia Department of Medicine, Charlottesville [1]	11,211	A	235	6	43	2	28	47	36	265	265	240	230	James C. Flippin, M.D., Act. Dean	Sept. 16	June 14	76
	WEST VIRGINIA			115	2	..	..	..										
77	West Virginia University School of Medicine, Morgantown* [1]	13,811	A	115	2	..	..	..	17	35	95	95	....	....	John N. Simpson, M.D., Dean	Sept. 21	June 14	77
	WISCONSIN			450	32	48	1	50										
78	University of Wisconsin Medical School, Madison [1 7]	46,385	A	194	25	..	..	..	107	36	100	100	100	100	Charles R. Bardeen, M.D., Dean	Sept. 22	June 20	78
79	Marquette University School of Medicine, Milwaukee	509,192	A	256	7	48	1	50	138	35	313	303	308	283	Eben J. Carey, M.D., Dean	Sept. 27	June 15	79
	CANADA [8]			2456	110	498	18	70										
80	University of Alberta Faculty of Medicine, Edmonton, Alta	58,821	..	106	9	14	3	4	82	30	202	202	202	202	Allan C. Rankin, M.D., Dean	Sept. 29	May 13	80
81	Dalhousie University Faculty of Medicine, Halifax, N. S.	58,372	..	116	5	35	..	3	60	32	200	200	200	200	John Stewart, M.D., Dean	Sept. 14	May 17	81
82	Queen's University Faculty of Medicine, Kingston, Ont	21,753	..	309	..	52	..	12	48	32	148	151	146	160	J. C. Connell, M.D., Dean	Sept. 24	May 25	82
83	University of Toronto Faculty of Medicine, Toronto, Ont	521,893	..	715	62	188	11	30	266	32	163	163	163	163	Alexander Primrose, M.D., Dean	Sept. 28	May 28	83
84	University of Western Ontario Medical School, London, Ont	60,960	..	107	2	19	..	1	71	33	140	140	148	178	Paul S. McKibben, Ph.D., Dean	Sept. 22	May 27	84
85	McGill University Faculty of Medicine, Montreal, Que	618,506	..	473	19	95	2	17	169	30	277	282	282	282	Charles F. Martin, M.D., Dean	Sept. 20	April 29	85
86	University of Montreal Faculty of Medicine, Montreal, Que	618,506	..	173	1	12	..	..	89	36	207	200	242	214	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15	86
87	Laval University Faculty of Medicine, Quebec, Que	95,193	..	220	..	39	..	..	50	34	150	150	150	150	Arthur Vallée, M.D., Secretary	Sept. 15	June 1	87
88	University of Manitoba Faculty of Medicine, Winnipeg, Man	179,087	..	249	12	51	2	3	137	32	180	175	185	185	S. Willis Prowse, M.D., Dean	Sept. 30	May 30	88

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

1. The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $105; Georgia, $200; Illinois, $35; Indiana, $75; Iowa, $174; Kansas, $10; Maryland, $100; Michigan, $80; Detroit, $85; Minnesota, $30; Mississippi, $50; Missouri, $10; North Dakota, $40; Ohio, $106; Oklahoma, $120; Oregon, $60; Tennessee, $100; Texas, $150; Vermont, $75; Virginia, $20; West Virginia, $150; Wisconsin, $125.

2. The College of Medical Evangelists had but three graduates because the fourth year class in 1926 is required to complete a hospital internship before receiving their M.D. degrees.

3. The Chicago Medical School graduates include fourteen 1925 graduates whose diplomas were recalled and regranted after completing hospital internships.

4. The population given is for Kansas City, Kansas, and Kansas City, Missouri.

5. The number of students is approximate; the number of graduates exact.

6. Three medical schools make a lower tuition charge for women than for men. The charge is $7 less each year at the University of Michigan, $15 less at the University of Pennsylvania and $5 less at the University of Vermont.

7. The third year of the medical course was given during the session of 1925-26 and in the fall of 1926 and thereafter the entire four year course will be given.

8. The population of Canadian cities, where medical colleges are located, was taken from the "Sixth Census of Canada, 1921."

Marginal Number	NAME OF COLLEGE	1 Alabama....273	2 Arizona....34	3 Arkansas....153	4 California....612	5 Colorado....200	6 Connecticut....275	7 Delaware....27	8 Dist. Columbia....187	9 Florida....127	10 Georgia....302	11 Idaho....32	12 Illinois....1,350	13 Indiana....606	14 Iowa....559	15 Kansas....270	16 Kentucky....297	17 Louisiana....181	18 Maine....64	19 Maryland....252	20 Massachusetts....771	Marginal Number
1	University of Alabama School of Medicine	79	....	....	....	....	....	....	....	2	4	....	....	....	1	....	1	1	....	....	....	1
2	University of Arkansas Medical Department	1	....	94	1	....	1	....	....	....	2	....	....	2	4	5	1	1	....	....	....	2
3	College of Medical Evangelists	....	3	....	65	4	....	....	12	2	....	2	11	2	4	5	....	2	1	....	2	3
4	Stanford University School of Medicine	....	....	....	135	1	....	....	....	....	....	5	1	1	....	1	....	....	....	....	....	4
5	University of California Medical School	....	....	....	203	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	5
6	University of Colorado School of Medicine	....	....	....	3	141	....	....	....	....	....	2	1	....	1	5	1	....	....	....	....	6
7	Yale University School of Medicine	....	....	....	4	2	89	....	2	....	....	....	1	....	1	1	....	....	5	1	8	7
8	Georgetown University School of Medicine	....	....	....	2	....	13	....	36	3	....	....	....	....	....	....	....	....	2	7	16	8
9	George Washington University Medical School	....	....	....	....	....	7	....	72	....	3	2	....	....	....	1	3	....	1	13	1	9
10	Howard University School of Medicine	2	1	3	4	....	5	3	28	5	8	....	8	3	2	1	4	5	12	2	10	10
11	Emory University School of Medicine	26	....	....	1	....	....	....	....	25	109	....	....	....	....	....	2	1	....	....	....	11
12	University of Georgia Medical Department	....	....	....	....	....	....	....	....	....	117	....	....	....	....	....	....	1	....	....	....	12
13	Chicago Medical School	....	....	....	1	1	....	....	2	1	1	....	111	2	1	....	....	....	....	2	....	13
14	Loyola University School of Medicine	1	....	....	5	2	3	....	....	1	....	....	215	8	14	4	....	2	1	....	1	14
15	Northwestern University Medical School	2	4	1	16	5	....	....	1	....	1	5	143	20	23	10	3	....	1	....	1	15
16	Rush Medical College (University of Chicago)	8	....	3	9	....	2	....	1	3	1	3	230	27	31	16	6	....	2	1	2	16
17	University of Illinois College of Medicine	4	3	....	5	1	....	....	....	3	1	1	413	5	4	4	....	....	....	....	....	17
18	Indiana University School of Medicine	....	....	1	4	....	....	....	....	....	....	....	5	339	....	....	5	....	....	....	....	18
19	State University of Iowa College of Medicine	....	....	....	1	1	....	....	....	....	....	....	4	....	332	....	....	....	....	....	....	19
20	University of Kansas School of Medicine	1	....	....	....	1	....	....	....	....	....	....	1	....	....	139	....	....	....	....	....	20
21	University of Louisville School of Medicine	5	....	1	4	....	2	....	....	2	1	4	6	18	....	4	122	....	....	....	....	21
22	Tulane University of Louisiana School of Medicine	48	4	11	7	....	1	....	....	29	9	....	3	....	....	1	4	138	....	1	1	22
23	Johns Hopkins University School of Medicine	10	....	2	2	4	6	....	7	5	6	1	9	2	2	....	3	2	....	48	9	23
24	Univ. of Maryland School of Med. & Coll. of P. & S.	3	....	....	1	....	10	2	....	2	....	....	....	....	....	....	1	....	1	128	2	24
25	Boston University School of Medicine	....	....	....	....	....	13	....	....	....	....	....	1	1	....	....	....	....	13	....	83	25
26	College of Physicians and Surgeons, Boston †	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28	26
27	Harvard University Medical School	5	2	1	25	5	20	....	1	1	9	....	17	7	8	4	4	....	11	2	132	27
28	Tufts College Medical School	1	....	....	....	....	35	....	....	....	....	....	....	....	....	....	....	....	11	....	324	28
29	Middlesex College of Medicine and Surgery.—E ‡	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	80	29
30	University of Michigan Medical School	1	....	....	5	2	....	....	1	1	1	....	5	17	4	....	5	....	....	2	3	30
31	Detroit College of Medicine and Surgery	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	31
32	University of Minnesota Medical School	....	....	....	....	....	1	....	....	....	....	....	2	....	4	1	....	....	....	....	....	32
33	University of Mississippi School of Medicine	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	33
34	University of Missouri School of Medicine	1	....	....	....	....	....	....	....	....	....	....	4	....	1	....	....	....	....	....	....	34
35	Kansas City University of Physicians and Surgs.—N.†	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35
36	St. Louis College of Physicians and Surgeons ‡	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	36
37	St. Louis University School of Medicine	1	2	1	40	1	3	....	1	3	....	1	60	6	17	15	....	5	....	1	5	37
38	Washington University School of Medicine	2	....	11	14	5	1	....	2	....	2	1	49	5	3	17	2	....	....	....	....	38
39	Creighton University School of Medicine	....	1	....	5	5	1	....	....	....	....	2	5	1	36	5	....	....	....	....	1	39
40	University of Nebraska College of Medicine	....	....	1	2	7	....	....	....	....	....	....	....	....	12	8	....	....	....	....	....	40
41	Dartmouth Medical School	....	....	....	....	....	....	....	1	2	....	....	1	....	1	....	....	....	....	1	6	41
42	Albany Medical College	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	1	....	2	42
43	University of Buffalo Medical Department	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	43
44	Columbia University College of Physicians and Surgs.	2	2	....	1	4	8	....	1	1	....	....	2	1	1	....	....	1	1	10	44
45	Cornell University Medical College	1	....	....	7	....	3	....	1	1	....	....	2	....	1	2	....	1	2	6	45
46	Long Island College Hospital	....	....	....	....	....	6	....	....	....	....	....	1	....	....	....	....	3	....	....	....	46
47	New York Homeo. Med. Coll. and Flower Hosp.—H	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	47
48	University and Bellevue Hospital Medical College	....	....	1	1	1	4	....	....	2	....	1	....	....	1	....	....	....	....	1	3	48
49	University of Rochester School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	49
50	Syracuse University College of Medicine	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	50
51	University of North Carolina School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51
52	Wake Forest College School of Medicine	1	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	52
53	University of North Dakota School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	53
54	Eclectic Medical College, Cincinnati.—E	....	1	....	1	....	1	....	....	....	....	....	4	10	1	2	17	....	....	....	....	54
55	University of Cincinnati College of Medicine	....	1	....	4	....	1	....	....	1	....	....	1	8	2	1	32	....	1	....	....	55
56	Western Reserve University School of Medicine	....	....	....	....	....	....	....	....	....	....	1	2	2	....	1	1	....	....	1	....	56
57	Ohio State University College of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	57
58	University of Oklahoma School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	58
59	University of Oregon Medical School	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	59
60	Hahnemann Med. Coll. and Hosp. of Philadelphia.—H	....	....	....	7	1	1	8	1	....	....	....	1	2	1	....	3	....	....	1	2	60
61	Jefferson Medical College of Philadelphia	4	....	2	7	1	14	5	2	4	4	2	3	3	3	4	....	....	2	9	5	61
62	Temple University School of Medicine	1	....	....	1	....	3	2	1	1	....	....	....	....	....	....	....	....	....	1	1	62
63	University of Pennsylvania School of Medicine	7	....	....	4	2	2	5	2	2	3	1	3	....	3	2	2	1	2	3	3	63
64	Woman's Medical College of Pennsylvania	....	....	....	4	....	1	1	....	....	1	....	1	....	2	....	....	....	....	2	1	64
65	University of Pittsburgh School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	65
66	Medical College of the State of South Carolina	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	66
67	University of South Dakota College of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	4	....	....	....	....	....	1	67
68	University of Tennessee College of Medicine	13	....	13	....	1	....	....	....	2	2	....	1	1	....	2	8	5	....	1	....	68
69	Meharry Medical College	14	....	4	1	1	....	8	13	15	....	....	5	1	....	3	2	5	....	2	4	69
70	Vanderbilt University School of Medicine	29	....	2	1	....	2	....	....	5	3	....	1	1	....	2	24	2	....	....	....	70
71	Baylor University College of Medicine	3	....	1	3	1	....	....	....	....	....	....	1	....	1	1	....	4	....	1	....	71
72	University of Texas School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72
73	University of Utah School of Medicine	....	....	....	1	1	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	73
74	University of Vermont College of Medicine	....	....	....	2	....	5	....	....	....	....	....	....	....	....	....	....	....	3	1	11	74
75	Medical College of Virginia	....	....	....	....	....	3	....	....	2	....	....	1	....	....	5	....	....	....	5	....	75
76	University of Virginia Department of Medicine	....	....	....	....	....	2	1	2	1	2	....	....	....	....	2	1	....	1	1	1	76
77	West Virginia University School of Medicine	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1	77
78	University of Wisconsin Medical School	....	....	....	4	....	....	....	....	....	....	....	8	1	1	2	1	....	....	....	....	78
79	Marquette University School of Medicine	1	....	....	....	....	....	....	....	....	....	....	6	1	12	1	....	....	....	....	....	79
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
† Figures and distribution are approximate.
‡ Figures exact; distribution approximate.

Marginal Number	21 Michigan.....694	22 Minnesota.....494	23 Mississippi.....161	24 Missouri.....561	25 Montana.....49	26 Nebraska.....333	27 Nevada.....32	28 New Hampshire...57	29 New Jersey.....579	30 New Mexico.....9	31 New York.....2,575	32 North Carolina...345	33 North Dakota....65	34 Ohio.....1,070	35 Oklahoma.....217	36 Oregon.....240	37 Pennsylvania...1,457	38 Rhode Island.....101	39 South Carolina...222	40 South Dakota.....105	41 Tennessee.....280	42 Texas.....695	43 Utah.....114	44 Vermont.....76	45 Virginia.....476	46 Washington.....129	47 West Virginia....231	48 Wisconsin.....542	49 Wyoming.....13	50 Philippines, etc..131	51 Foreign.....879	Totals.....13,840	Marginal Number
1	1	....	3	....	....	....	....	....	1	1	4	....	....	3	....	....	....	....	....	....	1	1	....	....	2	....	1	....	....	....	1	107	1
2	1	....	....	5	....	1	....	....	1	....	25	....	....	1	4	....	....	2	1	....	....	....	....	....	....	....	....	2	....	....	1	156	2
3	10	10	....	3	1	8	1	1	4	....	5	....	3	4	3	8	6	....	1	4	7	6	....	3	2	14	....	3	....	5	31	258	3
4	....	....	....	....	....	....	3	....	....	1	....	....	....	....	1	....	1	....	....	....	....	2	....	....	....	2	....	....	....	....	2	3	150	4
5	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	207	5
6	....	....	....	1	....	....	....	....	....	....	2	3	....	2	....	....	1	....	....	1	1	2	....	....	....	....	....	....	2	....	1	169	6
7	1	....	....	1	....	....	....	1	8	1	39	2	....	3	1	....	10	2	....	....	1	2	1	....	2	1	3	....	....	1	4	168	7
8	2	....	....	....	2	....	....	....	42	....	65	....	....	6	....	....	42	21	....	1	....	1	1	....	4	....	2	....	....	....	3	4	276	8
9	....	2	1	2	....	....	....	1	21	....	83	3	....	4	1	....	16	....	1	1	....	1	4	....	11	1	4	....	1	7	1	289	9
10	4	....	3	3	....	....	....	....	13	....	24	9	....	2	1	....	7	1	4	....	....	8	....	....	24	....	7	1	....	....	21	227	10
11	....	....	....	....	....	....	1	....	....	1	....	12	....	....	....	....	....	....	9	....	1	....	....	....	2	....	3	....	....	1	3	197	11
12	....	....	....	1	....	....	....	....	2	....	2	1	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	....	....	....	4	135	12
13	3	1	....	....	....	....	....	....	2	....	4	....	....	1	1	....	....	....	....	....	1	1	....	....	1	....	....	1	....	4	4	147	13
14	26	6	....	3	1	1	....	....	3	....	19	....	....	9	1	1	11	....	....	1	4	2	....	....	1	1	5	....	....	10	5	369	14
15	14	19	4	11	4	9	....	....	1	....	8	....	7	10	7	4	6	....	1	12	2	3	....	1	14	2	22	1	6	10	415	15
16	17	11	1	11	4	6	1	....	1	1	7	2	10	18	6	4	7	....	....	7	3	5	6	1	1	6	2	38	....	10	4	538	16
17	3	4	....	4	....	....	....	....	1	....	3	1	1	2	....	....	1	....	2	1	1	3	....	....	....	....	2	12	....	2	6	493	17
18	5	1	....	....	....	....	....	....	1	....	1	....	....	7	1	....	2	....	....	....	1	....	....	....	1	....	....	2	....	....	1	377	18
19	1	11	....	2	....	1	....	....	1	....	6	....	....	....	2	....	....	....	....	2	....	1	....	....	....	....	....	....	....	3	4	402	19
20	....	....	....	25	1	....	....	....	....	....	2	....	....	2	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	1	4	179	20
21	2	6	....	4	....	1	....	....	3	....	11	3	1	24	5	....	3	....	....	1	1	5	2	....	....	1	13	1	....	1	3	280	21
22	2	....	2	2	....	1	....	....	5	....	20	16	1	....	3	....	1	....	4	....	7	52	....	....	....	....	....	....	1	5	3	408	22
23	3	1	2	4	1	....	....	1	8	....	35	6	....	11	....	2	20	1	7	....	4	11	2	1	16	2	4	9	....	....	3	272	23
24	....	....	....	....	....	....	....	....	42	....	84	15	....	5	....	....	35	4	5	....	....	1	3	1	4	....	17	....	....	....	2	3	371	24
25	3	....	....	....	....	....	....	5	8	....	50	....	....	....	....	1	2	6	....	....	....	1	....	....	....	1	1	....	....	....	4	7	200	25
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	26
27	2	3	....	4	....	7	3	7	15	....	59	4	....	18	2	10	21	15	3	2	5	7	5	6	9	6	4	15	1	1	14	557	27
28	....	1	....	....	....	....	....	17	7	....	50	4	....	1	....	....	3	25	....	....	....	....	....	1	....	1	4	....	....	1	1	482	28
29	....	....	....	....	....	....	....	....	5	....	4	....	....	1	....	....	9	....	....	....	....	....	....	....	....	....	....	....	....	....	1	109	29
30	342	4	....	3	4	....	....	....	10	1	28	1	1	47	2	....	21	1	....	2	....	2	1	1	1	5	2	2	....	1	12	541	30
31	189	....	....	....	....	....	....	....	....	....	2	....	....	5	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	199	31
32	4	339	1	....	3	....	....	....	....	....	1	....	6	1	....	....	1	....	....	4	....	....	3	....	....	4	....	8	....	2	4	389	32
33	....	....	55	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	64	33
34	....	....	....	64	....	....	....	....	....	....	1	....	....	....	4	....	....	....	....	....	1	1	....	....	....	....	....	....	1	1	....	78	34
35	....	....	....	37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	37	35
36	....	....	....	50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	50	36
37	7	10	1	157	9	....	1	....	6	....	33	....	....	68	1	2	9	4	1	....	7	1	....	....	6	2	8	....	5	2	502	37
38	....	5	3	128	1	1	....	....	....	....	2	6	3	2	8	3	1	....	1	2	2	5	5	....	....	11	....	3	....	2	2	300	38
39	....	14	....	6	8	73	....	....	....	....	4	....	....	2	1	4	1	....	....	19	....	1	2	....	....	6	....	1	1	....	....	194	39
40	....	4	....	2	1	215	....	....	....	....	1	....	1	1	1	1	1	....	....	8	....	1	....	....	....	....	....	4	2	1	274	40
41	....	....	....	....	....	1	....	3	2	....	5	1	....	1	....	....	7	....	....	....	....	....	....	....	1	....	1	....	....	1	35	41
42	....	....	....	....	....	....	....	....	3	....	84	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	93	42
43	1	....	....	2	....	....	....	....	1	....	231	....	....	4	....	....	5	....	....	....	....	....	....	....	....	3	....	1	....	....	5	255	43
44	1	1	3	....	....	....	....	4	61	....	248	1	....	1	....	1	6	3	2	....	4	1	7	2	1	2	....	5	....	3	8	498	44
45	....	....	....	....	....	....	1	1	23	....	181	2	....	8	....	1	4	6	....	....	2	....	....	2	2	1	....	1	....	1	3	274	45
46	1	....	....	....	....	1	....	....	21	....	332	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	1	....	394	46
47	....	....	....	....	....	....	....	....	11	....	202	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	214	47
48	....	1	....	1	....	....	....	1	34	....	225	1	....	....	....	....	6	....	1	....	1	1	2	....	1	....	4	....	....	....	114	498	48
49	....	....	....	....	....	....	....	....	....	....	17	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	23	49
50	....	....	....	....	....	....	....	....	12	....	141	....	....	2	....	....	2	2	....	....	....	....	2	1	....	....	....	....	....	4	5	173	50
51	....	....	....	....	....	....	....	....	....	....	....	74	....	....	....	....	1	....	3	....	....	....	....	....	1	....	....	....	....	....	1	80	51
52	....	....	....	....	....	....	....	....	....	....	....	33	....	....	....	....	....	....	2	....	....	....	....	....	2	....	....	....	....	....	....	40	52
53	....	8	....	....	1	....	....	....	....	....	5	....	29	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	5	....	51	53
54	3	1	1	2	....	1	....	....	6	....	22	1	....	12	....	....	11	....	....	1	1	1	....	....	....	....	3	1	....	....	144	54
55	4	1	1	3	....	....	....	....	1	....	3	7	....	157	1	....	12	....	....	....	....	2	....	2	....	5	1	....	....	1	3	258	55
56	3	....	....	1	....	1	....	....	....	....	5	....	....	170	....	....	21	....	....	....	....	1	....	....	2	....	6	1	....	1	1	220	56
57	....	....	....	....	....	....	....	....	....	....	....	1	....	312	....	....	2	....	....	....	....	....	....	....	....	....	1	....	....	1	....	320	57
58	....	....	....	....	....	....	....	....	1	1	1	....	....	....	154	....	1	....	....	....	....	2	....	....	....	....	....	....	....	1	....	165	58
59	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	104	....	....	....	....	....	....	1	....	....	21	....	....	....	....	1	224	59
60	3	....	....	1	....	1	....	....	48	....	5	....	....	8	....	....	144	....	....	....	....	1	....	....	2	....	1	1	....	1	7	244	60
61	1	4	2	6	....	2	....	1	40	....	23	33	....	29	....	1	232	7	5	2	2	9	5	....	2	1	15	1	....	9	13	579	61
62	....	....	....	1	....	....	....	1	24	....	6	1	1	6	....	....	167	....	1	....	....	1	....	....	1	1	1	....	....	....	3	224	62
63	3	3	5	3	1	2	....	2	27	....	22	37	....	9	1	....	232	2	6	....	7	9	9	....	6	13	3	13	1	1	9	473	63
64	2	3	....	....	....	....	....	....	9	....	18	2	....	4	....	....	35	....	1	....	1	....	....	....	2	1	....	1	....	2	6	100	64
65	....	....	....	....	....	....	....	....	1	....	....	....	....	7	....	....	218	....	....	....	....	....	....	....	1	....	....	....	....	....	....	229	65
66	....	....	....	....	....	....	....	....	2	....	1	6	....	....	....	....	....	....	145	....	....	....	....	....	....	....	....	....	....	....	1	156	66
67	....	1	....	....	....	....	....	....	1	....	2	....	....	....	....	....	....	....	....	25	....	....	....	....	....	....	1	....	....	....	....	36	67
68	....	....	18	1	....	....	....	....	4	1	5	3	....	1	2	....	1	....	....	....	129	14	1	....	1	....	1	....	....	....	....	231	68
69	5	1	10	2	....	....	....	....	....	....	16	15	....	11	....	....	13	....	....	13	....	11	14	....	....	20	....	1	....	....	14	225	69
70	....	....	4	2	....	....	....	....	2	1	4	....	....	1	2	....	1	....	....	4	....	71	21	....	....	5	....	....	....	....	4	185	70
71	....	1	....	....	....	....	....	....	2	....	8	....	....	1	2	....	....	....	....	....	....	....	245	....	....	....	....	....	1	....	1	278	71
72	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	224	....	....	....	....	....	....	....	....	224	72
73	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	39	....	....	....	....	....	1	....	47	73
74	1	....	....	....	....	....	....	8	4	....	14	....	....	....	....	....	....	....	....	....	....	....	....	....	56	....	....	....	....	....	....	104	74
75	....	....	....	....	....	....	....	....	5	....	14	34	....	5	....	....	7	1	1	....	3	1	....	....	210	....	39	....	....	6	....	342	75
76	1	....	15	....	....	....	....	1	7	....	22	8	....	....	....	....	4	....	4	....	7	3	....	....	136	....	8	....	....	1	5	241	76
77	....	....	....	....	....	....	....	1	2	....	2	....	....	12	....	....	17	....	....	....	....	....	....	....	1	....	75	....	....	4	....	117	77
78	4	1	....	....	1	....	....	....	2	....	....	....	....	3	....	....	....	....	....	2	....	2	....	....	....	....	....	185	....	....	2	219	78
79	9	16	....	2	4	....	....	....	....	....	7	2	2	5	....	....	....	....	....	2	....	....	....	....	....	....	1	191	....	1	....	263	79
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		

(Continued from page 565)

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,962 medical graduates, 2,388 (table 6) also obtained degrees in arts or science. This was 43 less than last year. This year 60.3 per cent of all graduates held collegiate degrees as compared with only 15.3 per cent of the graduates in 1910. Of the 3,801 nonsectarian school graduates, 2,365, or 62.2 per cent, were reported to have baccalaureate degrees; of the 80 homeopathic graduates, 16, or 20.0 per cent, and of the 64 eclectic graduates, 7 or 10.9 per cent. As noted in table 10, of the 2,388 graduates holding baccalaureate degrees, 345—the largest number—came from the Illinois medical colleges. New York reported 252, Pennsylvania reported 223, Massachusetts reported 154, and Ohio reported 133. All the better medical schools are now requiring two or more years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

TABLE 3.—*Medical Students Shown by Classes*

NAME OF COLLEGE	Enrolled During 1925-26				
	1st Year	2d Year	3d Year	4th Year	Totals
University of Alabama School of Medicine*	57	50	..	..	107
University of Arkansas Medical Department	57	31	43	25	156
College of Medical Evangelists	93	85	36	44	258
Stanford University School of Medicine	45	50	36	28	159
University of California Medical School	58	44	50	55	207
University of Colorado School of Medicine	60	40	32	37	169
Yale University School of Medicine	57	48	43	50	198
Georgetown University School of Medicine	96	90	47	43	276
George Washington University Med. School	87	59	74	40	260
Howard University School of Medicine	61	53	53	60	227
Emory University School of Medicine	55	42	43	57	197
University of Georgia Medical Department	38	43	30	24	135
Chicago Medical School	33	34	34	46	147
Loyola University School of Medicine	140	94	80	55	369
Northwestern University Medical School	111	84	111	109	415
Rush Medical College (Univ. of Chicago)	96	108	153	182	538
University of Illinois College of Medicine	133	121	109	128	493
Indiana University School of Medicine	113	97	87	80	377
State University of Iowa College of Med	130	117	80	75	402
University of Kansas School of Medicine	68	37	34	40	179
University of Louisville School of Medicine	73	61	67	59	260
Tulane Univ. of Louisiana School of Med	126	90	105	87	408
Johns Hopkins University School of Med	60	71	73	68	272
Univ. of Md. Sch. of Med. & Coll. P. & S.	122	92	86	71	371
Boston University School of Medicine	59	44	48	49	200
College of Physicians & Surgeons, Boston†	6	6	8	9	28
Harvard University Medical School	125	116	135	131	507
Tufts College Medical School	140	118	114	110	482
Middlesex College of Medicine and Surg.—E.	29	19	29	32	109
University of Michigan Medical School	135	124	119	115	541
Detroit College of Medicine and Surgery	63	56	40	40	199
University of Minnesota Medical School	111	111	105	62	389
University of Mississippi School of Med.*	35	29	...	..	64
University of Missouri School of Medicine*	42	36	...	..	78
Kansas City Univ. of Phys. and Surgs.—N.†	5	6	9	17	37
St. Louis College of Physicians and Surgs.†	6	12	16	16	50
St. Louis University School of Medicine	161	108	115	118	502
Washington University School of Medicine	84	70	78	77	309
Creighton University School of Medicine	60	44	49	39	194
University of Nebraska College of Medicine	85	69	50	70	274
Dartmouth Medical School*	18	17	..	..	35
Albany Medical College	34	26	17	16	93
University of Buffalo Medical Department	77	64	66	48	255
Columbia Univ. College of Phys. & Surgs	113	95	98	95	401
Cornell University Medical College	83	68	59	64	274
Long Island College Hospital	121	105	77	91	394
N. Y. Homeo. M. Coll. & Flower Hosp.—H.	74	65	34	41	214
University and Bellevue Hosp. Med. College	120	91	107	90	408
University of Rochester School of Medicine	22	...	...	..	22
Syracuse University College of Medicine	49	42	42	40	173
Univ. of North Carolina School of Med.*	42	38	..	..	80
Wake Forest College School of Medicine*	22	18	..	..	40
Univ. of North Dakota School of Medicine*	27	24	...	..	51
Eclectic Medical College, Cincinnati.—E.	36	36	34	38	144
University of Cincinnati College of Medicine	70	65	68	55	258
Western Reserve University School of Med.	73	61	39	47	220
Ohio State University College of Medicine	101	80	60	79	320
University of Oklahoma School of Medicine	35	43	47	40	165
University of Oregon Medical School	71	59	44	50	224
Hahnemann Medical College and Hospital of Philadelphia.—H.	80	64	61	39	244
Jefferson Medical College of Philadelphia	158	135	142	144	579
Temple University School of Medicine	61	59	47	57	224
University of Pennsylvania School of Med.	111	92	135	135	473
Woman's Medical College of Pennsylvania	32	17	21	30	100
University of Pittsburgh School of Medicine	66	60	56	47	229
Medical College of the State of S. Carolina	37	45	36	38	156
University of So. Dakota College of Med.*	18	18	..	..	36
University of Tennessee College of Medicine	78	56	48	49	231
Meharry Medical College	67	57	55	46	225
Vanderbilt University School of Medicine	49	41	43	52	185
Baylor University College of Medicine	111	75	52	40	278
University of Texas School of Medicine	66	43	46	69	224
University of Utah School of Medicine*	26	21	..	..	47
University of Vermont College of Medicine	29	32	17	26	104
Medical College of Virginia	93	79	89	81	342
University of Virginia Department of Med	82	62	52	45	241
West Virginia University School of Med.*	61	56	..	..	117
University of Wisconsin Medical School	108	85	26	..	219
Marquette University School of Medicine	75	70	62	56	263
Totals for 1926	5,733	4,779	4,201	4,107	18,840
Totals for 1925	5,492	4,415	4,136	4,157	18,200
Totals for 1924	5,160	4,441	4,330	3,797	17,728

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.
† Figures and distribution are approximate.
‡ Figures exact; distribution approximate.

TABLE 5.—*Medical College Graduates*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1880	2,673	380	188	..	..	3,241
1890	3,853	380	221	..	..	4,454
1900	4,715	413	86	..	..	5,214
1904	5,190	371	146	20	20	5,747
1910	4,113	183	114	16	14	4,440
1915	3,286	195	55	..	..	3,536
1920	2,826	97	80	..	94	3,047
1921	2,969	115	80	..	78	3,192
1922	2,359	64	34	..	73	2,720
1923	2,984	49	16	..	71	3,120
1924	3,395	74	27	..	66	3,562
1925	3,856	80	38	..	..	3,974
1926	3,801	80	64	..	17	3,962

WOMEN IN MEDICINE

During the last year there were 935 women studying medicine, or 25 more than last year. The percentage of women to all medical students this year is 4.4. There were 212 women graduates this year, 8 more than last year. Of all the women matriculants, 100 were in attendance at and 29 graduated from the one medical college for women, while 835 (89.6 per cent) were matriculated in, and 183 (86.2 per cent) graduated from the coeducational colleges.

TABLE 6.—*Medical Graduates with Liberal Arts Degrees*

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.
1910	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1915	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1920	2,826	1,307	46.2	97	11	11.3	80	3	10.0	3,043	1,321	43.5
1921	2,969	1,447	48.2	115	33	28.7	30	...	...	3,192	1,465	46.0
1922	2,358	1,440	61.1	64	13	20.3	34	2	5.9	2,529	1,455	57.5
1923	2,984	1,770	59.3	49	13	26.5	16	3	18.7	3,120	1,787	57.3
1924	3,395	1,991	58.6	74	27	36.5	27	2	7.4	3,562	2,020	56.7
1925	3,856	2,408	62.4	80	21	26.2	38	2	5.3	3,974	2,431	61.2
1926	3,801	2,365	62.2	80	16	20.0	64	7	10.9	3,962	2,388	60.3

Note.—The one remaining nondescript college had but seventeen graduates, none of which held a collegiate degree.

NUMBER OF COLLEGES

The number of medical colleges existing in certain years since 1850 are shown in table 7. The number has decreased from 162 in 1906 to 79—the lowest number—in 1924. Last year, with the opening of the new medical school of the University of Rochester, N. Y., the number 80 was restored. This year the

number again drops to 79 with the closing of the Kansas City College of Medicine and Surgery, through the revocation of its charter.

Of the 79 colleges, 74 are nonsectarian (regular), 2 are homeopathic, 2 are eclectic, and 1 is nondescript. One of the colleges, the Kansas City University of

TABLE 7.—*Medical Colleges*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1850	44	3	4	1	..	52
1860	58	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1906	130	19	8	3	2	162
1910	109	13	8	1	1	131
1915	83	9	4	..	..	96
1920	76	5	1	..	3	85
1921	74	5	1	..	3	83
1922	74	3	1	..	3	81
1923	74	2	1	..	3	80
1924	73	2	1	..	3	79
1925	74	2	1	..	3	80
1926	74	2	2	..	1	79

Physicians and Surgeons, is intimately related to osteopathy or gives liberal advanced standing to students of osteopathic colleges. The Middlesex College of Medicine and Surgery, which declares itself an eclectic college, is also, apparently, affiliated with osteopathy. The Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons were involved in the Missouri diploma-mill scandal in the fall of 1923. The charter of the former has just been revoked, and it is expected that the same action will be taken regarding the latter.[2]

The colleges named above, together with the Chicago Medical School and the College of Physicians and Surgeons of Boston, because of their serious low grade, could not be rated higher than class C by the Council on Medical Education and Hospitals. They are also officially reported as being not recognized by the licensing boards of about forty-six states. It

TABLE 8.—*College Terms*

	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1915	..	...	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1920	..	...	..	...	1	1.2	10	11.8	38	44.7	29	34.1	..	...
1921	..	...	..	...	..	...	11	13.1	39	46.4	28	33.3	..	...
1922	..	...	..	...	..	...	10	13.1	43	56.6	23	30.3	..	...
1923	..	...	..	...	..	...	6	7.5	48	60.0	22	25.0	..	...
1924	..	...	..	...	..	...	6	7.6	44	55.7	23	29.0	..	...
1925	..	...	..	...	..	...	6	7.6	35	43.8	33	41.2	1	1.2
1926*	..	...	..	...	..	...	6	7.6	36	45.6	32	40.5	1	1.2

* Information not furnished by four class C colleges.

matters little, therefore, whether diplomas issued by them are earned by actual attendance or whether they are purchased outright. Their holders are ineligible for licenses in all but a few states—notably Arkansas, and two other states.

2. The Kansas City College of Medicine and Surgery is to be continued, apparently, under a new charter, since an institution bearing the name "American Medical University" is sending out circular letters announcing the same address and also claiming to teach eclectic medicine.

LENGTH OF TERMS

During the last twenty-six years (table 8) there has been a lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1905, the majority of colleges had sessions of twenty-eight weeks or less. For ten years, however, no college has had sessions shorter than twenty-nine weeks, and for six years the shortest session reported has been thirty-one weeks. This year sessions of from thirty-three to thirty-seven weeks were reported by sixty-eight, or 86 per cent, of all colleges. One medical school, with night classes, reported sessions of thirty-eight weeks.

TUITION AND OTHER FEES

In table 1, pages 566, 567, are given the amounts charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In table 9, the seventy-nine colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Eleven colleges charge fees of $150 or less a year; twenty-seven charge from $150 to $250; thirty-two from $250

TABLE 9.—*College Fees—1926*

	Class A	Class B	Class C	Per Cent.	Total
$ 50 to 100	4	..	..	5.1	4
100 to 150	6	..	1	8.9	7
150 to 200	13	..	1	17.7	14
200 to 250	10	1	2	16.4	13
250 to 300	12	1	1	17.7	14
300 to 350	18	..	..	22.8	18
350 to 450	5	1	..	7.6	6
450 to 550	3	..	..	3.8	3
Totals	71	3	5	100.0	79

Average fee per student in all colleges, $274.

to $350; six charge from $350 to $400, and three colleges in New York City this year charge between $500 and $550. The average fee per student in all colleges was $274. Of the eleven colleges charging $150 or less, ten are listed among class A (acceptable) colleges by the Council on Medical Education and Hospitals. Among these are the schools of medicine of several state universities for residents of those states. The five colleges listed by the Council in class C charge fees of $150 to $350 a year even though the diplomas from these colleges are reported as not recognized by from forty-two to forty-eight state licensing boards.[3]

COLLEGE FEES DURING SIXTEEN YEARS

As shown in table 10, tuition fees in medical schools have been gradually increased during the last sixteen years. From 1910 to 1915, the majority of medical schools were charging fees of $150 or less. From 1916 to 1922 the majority were charging fees above $150, while since 1920 the majority have included several medical schools charging more than $300. The percentage of medical schools charging more than $300 increased from 4.7 in 1920 to 34.2 in 1926. Now, twenty-seven, or 33.8 per cent, of all colleges are charging fees over $300 per student, and three, or 3.8 per cent, are charging over $500. The average

3. J. A. M. A. 86: 1542-1543 (May 15) 1926, table D.

fees charged per student by all colleges in 1910 was $118; in 1915 it had increased to $145; in 1920, to $177; in 1925, to $236, and in 1926, to $274.

In 1910 there were still several medical schools which were paying all expenses, and a few were making profits from students' fees. At present, however, the colleges are expending for the instruction of each student from two to several times as much as he pays in fees. This is made possible because of state aid or private endowment. No medical college in this period of scientific progress can maintain the laboratories and pay the essential instructors and properly teach modern medicine on the income received alone from students' fees.

TABLE 10.—*Increase in Medical College Fees During Sixteen Years*

	Showing for each Year the Number and Percentage of Colleges Requiring																				Total Colleges
	$50 or Less		$50 to $100		$100 to $150		$150 to $200		$200 to $250		$250 to $300		$300 to $350		$350 to $450		$450 to $550				
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
1910	7	5.3	39	29.3	62	46.6	22	16.5	2	1.5	1	0.8	..	...	..	...	..	...			133
1911	2	1.7	33	27.5	54	45.0	27	22.5	4	3.3	..	...	..	...	..	...	..	...			120
1912	2	1.7	17	14.7	61	52.5	32	27.6	3	2.6	1	0.9	..	...	..	...	..	...			116
1913	3	2.8	20	18.9	43	40.6	34	32.1	5	4.7	1	0.9	..	...	..	...	..	...			106
1914	5	4.9	11	10.8	44	43.1	35	34.3	6	5.9	1	1.0	..	...	..	...	..	...			102
1915	6	6.4	10	10.6	31	33.0	38	40.5	7	7.4	2	2.1	..	...	..	...	..	...			94
1916	6	6.5	13	14.0	23	24.7	41	44.1	8	8.6	2	2.1	..	...	..	...	..	...			93
1917	5	5.3	11	11.6	29	30.5	39	41.0	7	7.4	4	4.2	..	...	..	...	..	...			95
1918	5	5.6	11	12.4	22	24.7	35	39.3	12	13.5	4	4.5	..	...	..	...	..	...			89
1919	5	5.8	9	10.6	14	16.5	35	41.2	18	21.2	4	4.7	..	...	..	...	..	...			85
1920	3	3.5	9	10.5	19	22.3	27	32.0	19	22.3	4	4.7	3	3.5	1	1.2	..	...			85
1921	3	3.6	7	8.4	15	18.2	25	30.1	18	21.7	7	8.4	7	8.4	1	1.2	..	...			83
1922	3	3.7	7	8.6	12	16.1	19	23.5	19	23.5	9	11.1	10	12.3	1	1.2	..	...			81
1923	2	2.5	7	8.7	6	7.5	22	27.5	18	22.5	11	13.8	13	16.3	1	1.2	..	...			80
1924	1	1.3	5	6.3	8	10.1	21	26.6	14	17.7	14	17.7	13	16.5	3	3.8	..	...			79
1925	..	...	6	7.5	6	7.5	20	25.0	13	16.3	13	16.2	19	23.7	3	3.8	..	...			80
1926	..	...	4	5.1	7	8.9	14	17.7	13	16.4	14	17.7	18	22.8	6	7.6	3	3.8			79

TABLE 11.—*Medical Colleges, Students and Graduates by States*

State	Colleges: Class A	Colleges: Class B	Colleges: Class C	Students: Men	Students: Women	Graduates: Men	Graduates: Women	Grads. with A.B. or B.S.
Alabama	1	..	..	106	1	.....	...	.....
Arkansas	1	..	..	155	1	24	...	16
California	3	..	..	545	79	66	12	64
Colorado	1	..	..	156	13	32	5	17
Connecticut	1	..	..	190	8	47	2	39
District of Columbia	3	..	..	756	16	142	2	67
Georgia	2	..	..	327	5	80	1	50
Illinois	1	..	1	1,855	107	436	21	345
Indiana	1	..	..	366	11	79	1	78
Iowa	1	..	..	389	13	71	2	72
Kansas	1	..	..	166	13	33	4	27
Kentucky	1	..	..	255	5	59	...	30
Louisiana	1	..	..	393	15	80	3	45
Maryland	2	..	..	605	38	130	7	101
Massachusetts	3	..	2	1,272	54	308	19	154
Michigan	2	..	..	701	39	153	9	60
Minnesota	1	..	..	363	26	88	8	96
Mississippi	1	..	..	63	1	.....	...	.....
Missouri	3	..	2	956	20	211	4	135
Nebraska	2	..	..	454	14	108	1	83
New Hampshire	1	..	..	35	...	.....	...	.....
New York	8	1	..	2,070	164	446	35	232
North Carolina	2	..	..	118	2	.....	...	.....
North Dakota	1	..	..	50	1	.....	...	.....
Ohio	3	1	..	901	41	205	12	133
Oklahoma	1	..	..	155	10	38	2	35
Oregon	1	..	..	215	9	47	2	30
Pennsylvania	5	1	..	1,717	132	402	41	223
South Carolina	1	..	..	149	7	35	3	16
South Dakota	1	..	..	35	1	.....	...	.....
Tennessee	3	..	..	634	7	145	1	72
Texas	2	..	..	476	26	101	7	59
Utah	1	..	..	47	...	.....	...	.....
Vermont	1	..	..	96	8	24	2	10
Virginia	2	..	..	334	8	78	3	21
West Virginia	1	..	..	115	2	.....	...	.....
Wisconsin	2	..	..	450	32	49	1	50
Totals	71	3	5	17,905	935	3,750	212	2,888
				18,840		3,962		

As the cost of conducting medical schools has increased, there has also been an increase—and properly so—in the fees charged for tuition. A large provision has been made for scholarships and loan funds (page 590) for the benefit of deserving students who are financially poor. More are needed now because students cannot spare the time to earn money during their attendance at the medical school.

COLLEGES, STUDENTS AND GRADUATES BY STATES

New York now has nine medical colleges—the largest number—(table 11) all but one of which are in class A. Pennsylvania has six colleges, and Illinois, Massachusetts and Missouri have five each. Of class C colleges, however, Missouri and Massachusetts have two each, and Illinois, one. These class C colleges exist because the licensing boards in certain states do not have or do not exert the power to refuse to examine their graduates.

New York had the largest number of students enrolled, 2,234, followed by Illinois with 1,962, Pennsylvania with 1,849, and Massachusetts with 1,326. New York leads also in the number of graduates, having reported 481, followed by Illinois with 457, Pennsylvania with 443, Massachusetts with 322, and Ohio with 217.

COEDUCATION IN MEDICAL SCHOOLS

In recent years medical schools in increasing numbers have opened their classes to women, so that at present only eight medical schools in the United States and two in Canada are limited to men students. The Woman's Medical College of Pennsylvania is the only medical school that is entirely for women. Table 12 shows for each medical school the dates when it was organized and when it became coeducational. Prior to 1900, only thirty-two of the medical schools were coeducational. Thirteen others became coeducational between 1900 and 1910. Twenty-four made the change between 1910 and 1920, while four others began to admit women during the last six years.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 13 shows, for each year specified, the students and graduates grouped according to their classification by the Council on Medical Education and Hospitals. During the last thirteen years the number of students enrolled in class A colleges has increased from 11,122 to 17,887. Both the numbers and the percentages of students enrolled in class B and class C colleges have

decreased. The percentage of students in class B colleges dropped from 24.4 to 3.0, and in class C colleges from 10.2 to 2.0. Of graduates, also, the percentage in class A colleges has increased, while it has

TABLE 12.—*Coeducation in Medical Schools*

Name of College	Date of Organization	Year Co-Education Began
University of Alabama School of Medicine	1859	1920
University of Arkansas Medical Department	1879	1879
College of Medical Evangelists	1909	1909
Stanford University School of Medicine	1908	1908
University of California Medical School	1863	1863
University of Colorado School of Medicine	1883	1883
Yale University School of Medicine	1810	1916
Georgetown University School of Medicine	1851	....
George Washington University Medical School	1825	1884
Howard University School of Medicine	1869	1869
Emory University School of Medicine	1854	....
University of Georgia Medical Department	1828	1920
Chicago Medical School	1911	1919
Loyola University School of Medicine	1888	1900
Northwestern University Medical School	1859	1926
Rush Medical College	1843	1898
University of Illinois College of Medicine	1882	1808
Indiana University School of Medicine	1903	1903
State University of Iowa College of Medicine	1869	1870
University of Kansas School of Medicine	1890	1890
University of Louisville School of Medicine	1837	1837
Tulane University of Louisiana School of Medicine	1834	1915
Johns Hopkins University School of Medicine	1893	1893
Univ. of Maryland Sch. of Med. & Coll. of P. & S.	1807	1918
Boston University School of Medicine	1873	1873
Harvard University Medical School	1782	....
Tufts College Medical School	1893	1894
Detroit College of Medicine and Surgery	1885	1917
University of Michigan Medical School	1850	1870
University of Minnesota Medical School	1883	1883
University of Mississippi School of Medicine	1903	1903
St. Louis University School of Medicine	1901	....
University of Missouri School of Medicine	1845	1872
Washington University School of Medicine	1842	1918
Creighton University School of Medicine	1892	1892
University of Nebraska College of Medicine	1881	1882
Dartmouth Medical School	1797	....
Albany Medical College	1838	1915
Columbia University College of Phys. and Surgs.	1807	1917
Cornell University Medical College	1898	1898
Long Island College Hospital	1858	1918
New York Homeo. Med. Coll. & Flower Hospital	1858	1919
Syracuse University College of Medicine	1872	1872
University and Bellevue Hospital Medical College	1898	1919
University of Buffalo Medical Department	1846	1846
University of Rochester School of Medicine	1925	1925
University of North Carolina School of Medicine	1890	1914
Wake Forest College School of Medicine	1902	....
University of North Dakota School of Medicine	1905	1905
Eclectic Medical College	1833	1871
Ohio State University College of Medicine	1907	1907
University of Cincinnati College of Medicine	1900	1909
Western Reserve University School of Medicine	1843	1919
University of Oklahoma School of Medicine	1900	1900
University of Oregon Medical School	1887	1887
Hahnemann Med. Coll. and Hosp. of Philadelphia	1848	....
Jefferson Medical College	1825	....
Temple University School of Medicine	1901	1901
University of Pennsylvania School of Medicine	1765	1916
University of Pittsburgh School of Medicine	1886	1890
Woman's Medical College of Pennsylvania	1850	....
Medical College of the State of South Carolina	1823	1895*
University of South Dakota College of Medicine	1907	1907
Meharry Medical College	1876	1876
University of Tennessee College of Medicine	1876	1911
Vanderbilt University School of Medicine	1874	1925
Baylor University College of Medicine	1900	1900
University of Texas School of Medicine	1891	1891
University of Utah School of Medicine	1906	1906
University of Vermont College of Medicine	1822	1920
Medical College of Virginia	1838	1918
University of Virginia Department of Medicine	1827	1920
West Virginia University School of Medicine	1902	1909
Marquette University School of Medicine	1913	1912
University of Wisconsin Medical School	1907	1907
Dalhousie University Faculty of Medicine	1867	1871
Laval University Faculty of Medicine	1848	....
McGill University Faculty of Medicine	1824	1919
Queen's University Faculty of Medicine	1854	....
University of Alberta Faculty of Medicine	1913	1913
University of Manitoba Faculty of Medicine	1883	1883
University of Montreal Faculty of Medicine	1843	1925
University of Toronto Faculty of Medicine	1843	1909
University of Western Ontario Medical School	1881	1913

*Co-educational 1895; privilege for women withdrawn 1912; restored 1917.

decreased in class B and class C colleges. Such reductions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges.

GRADUATE MEDICAL EDUCATION

The facilities for graduate medical instruction in the United States are set forth in pages 585-589. A list of graduate medical schools that have been approved by the Council on Medical Education and Hospitals is published alphabetically. There is also a series of sixty subjects under each of which is given a list of the institutions in which approved courses of instruction are being given. Other subjects will be added from time

TABLE 13.—*Students and Graduates According to Classification*

	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
Year	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1915	11,314	76.0	2,608	17.9	909	6.1	2,629	74.4	668	19.4	219	6.2
1920	12,220	89.2	680	4.8	798	6.0	2,660	88.4	152	5.0	205	6.6
1925	17,497	96.2	554	3.0	149	0.8	3,852	96.2	118	3.0	4	0.8
1926	17,867	95.0	582	3.0	371	2.0	3,732	94.2	130	3.3	100	2.5

to time. Other institutions are rapidly being added to the list. There are now on the approved list forty-one graduate medical schools of the United States and seventeen of foreign countries. There are also fifty hospitals of the United States in which approved residencies in certain specialties can be obtained.

NEGRO MEDICAL STUDENTS AND GRADUATES

Owing to the special interest that has been shown recently in regard to the numbers of negro medical students and graduates enrolled in the various medical schools, the tabulation published herein has been made of those reported as having been enrolled in medical schools during the session of 1925-1926. In the session

TABLE 14.—*Negro Medical Students*

Name of College	Session of 1925-26	
	Students	Graduates
College of Medical Evangelists	1	..
University of California Medical School	1	..
Howard University School of Medicine	226	54
Northwestern University Medical School	10	3
Rush Medical College	14	2
Chicago Medical School	24	3
Loyola University School of Medicine	15	..
Indiana University School of Medicine	5	1
University of Kansas School of Medicine	1	..
Boston University School of Medicine	1	..
Harvard University Medical School	7	2
Tufts College Medical School	4	..
University of Michigan Medical School	3	2
University of Nebraska College of Medicine	1	..
Columbia University College of Phys. & Surgs.	1	..
Long Island College Hospital	1	..
Western Reserve University School of Medicine	1	..
Ohio State University College of Medicine	4	..
Temple University School of Medicine	2	1
Woman's Medical College of Philadelphia	1	..
Meharry Medical College	225	47
Dalhousie University Faculty of Medicine	4	4
McGill University Faculty of Medicine	16	3
University of Toronto Faculty of Medicine	6	..
Totals for 1926	574	122
Totals for 1925	543	126
Totals for 1924	471	85

of 1923-1924, 471 negro students were enrolled, of whom eighty-five were graduated; during 1924-1925, 543 negro students were enrolled (including twenty in the McGill University Faculty of Medicine), of whom 126 were graduated, and during 1925-1926, 574 negro students were enrolled, of whom 122 were graduated.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, of which ten do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1925. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1925. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Twelve states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah and Washington, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,467,190, has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 13,083.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920, clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Since 1920 men and women students have been admitted on equal basis. The faculty includes 7 professors and 7 instructors, assistants, etc., a total of 14. The course of study covers two years of thirty-six weeks each. The tuition fee each year is $222. The Dean is Dr. Clyde Brooks. Total registration for 1925-1926 was 107. The sixty-first session begins Sept. 13, 1926, and ends May 31, 1927.

ARKANSAS

Arkansas, population 1,852,905, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 74,216.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language, before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Co-educational since date of organization. The faculty consists of 24 professors and 34 lecturers and assistants, total 58. The curriculum embraces four years of thirty-four weeks each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $85, $90, $75 and $100; nonresidents are charged $100 additional each year. The Dean is Dr. Morgan Smith. The total registration for 1925-1926 was 156; graduates, 24. The forty-eighth session begins Sept. 16, 1926, and ends June 2, 1927.

CALIFORNIA

California, population 4,021,320, has three medical colleges. Two are located in San Francisco, a city of 557,530 inhabitants. They are Stanford University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure a license to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least a year of work of college grade including courses in physics, chemistry and biology before beginning the second half of the second year in the study of medicine.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Co-educational since organization. Three years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 66 professors and 170 associates and assistants, a total of 236. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $248, $235 and $225; nonresidents are charged $300 additional each year. The Dean is Dr. L. S. Schmitt. Total registration for 1925-1926 was 207; graduates, 48. The fifty-fourth session begins Aug. 13, 1926, and ends May 11, 1927.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. Co-educational since 1909 the date of organization. The faculty is composed of 50 professors and 113 associates, assistants and instructors, a total of 163. The course extends over five years of nine months each—the fifth year consisting of an internship in a hospital, or of special work in a department of the Medical School. The work of the first two years is given at Loma Linda and the third and fourth years at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $236, $233, $316 and $286. The President is Dr. Newton Evans, Loma Linda, Calif., and the Dean of the Clinical Division is Dr. P. T. Magan, Los Angeles. The total registration for 1925-1926 was 258; graduates, 3. The eighteenth session begins Sept. 6, 1926, and ends May 29, 1927.

San Francisco-Stanford University

STANFORD UNIVERSITY SCHOOL OF MEDICINE, Campus, Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Co-educational since organization. The faculty consists of 75 professors and 98 lecturers, assistants, etc., a total of 173. Three years of collegiate work are required for admission. The course covers four years of nine months each, plus a fifth year of practice or intern work. The total fees for each of the first four years are $261. The Dean is Dr. William Ophüls, San Francisco. The total registration for 1925-1926 was 159; graduates, 27. The seventeenth session begins Oct. 1, 1926, and ends June 15, 1927.

COLORADO

Colorado, with a population of 1,019,286, has one medical college, the University of Colorado School of Medicine. It is located in Denver, which has a population of 280,911.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination.

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Co-educational since organization. The faculty embraces 42 professors and 31 lecturers, instructors and assistants, a total of 73. The work embraces a graded course of four years of nine months each and a year's internship in a hospital. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $206, $221, $195 and $185. Nonresidents pay $105 more each year. The Dean is Dr. Maurice H. Rees. The total registration for 1925-1926 was 169; graduates, 37. The forty-fifth session begins Sept. 27, 1926, and ends June 10, 1927.

CONNECTICUT

Connecticut, with a population of 1,531,255, has one medical college, Yale University School of Medicine, located in New Haven, population 178,927.

Students who desire to practice medicine in Connecticut will not be eligible unless, prior to entering the study of medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 150 York Street and at corner Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Co-educational since 1916. The faculty consists of 62 professors and 95 lecturers and assistants, a total of 157. The requirements for admission are three years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1925-1926 was 198; graduates, 49. The one hundred and fourteenth session begins Sept. 30, 1926, and ends June 15, 1927.

DISTRICT OF COLUMBIA

The District of Columbia, population 497,906, has three medical colleges: George Washington University Medical School, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Co-educational since 1884. The faculty is composed of 57 professors and 109 instructors, demonstrators and assistants, a total of 166. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $319, $316, $316 and $316. The Dean is Dr. William C. Borden. The total registration for 1925-1926 was 269; graduates, 46. The one hundred and second session begins Sept. 27, 1926, and ends June 8, 1927.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 25 professors, 101 instructors and assistants; total, 126. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for each of the four sessions, respectively, are $255, $250, $250 and $260. The Dean is Dr. George M. Kober. The registration for 1925-1926 was 276; graduates, 43. The seventy-sixth session begins Sept. 27, 1926, and ends June 8, 1927.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1874. Co-educational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 34 professors and 26 lecturers and assistants, 60 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-three weeks each. The fees of each of the four sessions, respectively, are $212.50, $207.50, $207.50 and $214.50. The Dean is Dr. Edward A. Balloch. Registration for 1925-1926 was 227; graduates, 55. The fifty-ninth session begins Oct. 4, 1926, and ends June 17, 1927.

GEORGIA

Georgia, population 3,058,260, has two medical colleges, University of Georgia Medical Department, located in Augusta, population 55,245, and the Emory University School of Medicine in Atlanta, a city of 222,963.

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 98 N. Butler Street and Druid Hills.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for admission. The faculty has 15 professors and 115 associates and assistants, a total of 130. The course of study is four years of thirty-three weeks each. The fees for each of the four years, respectively, are $253, $233, $228 and $253. The Dean is Dr. Russell H. Oppenheimer. Total registration for 1925-1926 was 197; graduates, 57. The next session begins Sept. 29, 1926, and ends June 7, 1927.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. Co-education was begun in 1920. The faculty includes 14 professors and 48 assistants, 62 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia and $300 each year for non-residents. The Dean is Dr. William H. Goodrich. The total registration for 1925-1926 was 135; graduates 24. The ninety-eighth session begins Sept. 27, 1926, and ends June 4, 1927.

ILLINOIS

Illinois, population 6,964,950, has five medical colleges, all located in Chicago, a city of 2,995,239 inhabitants. They are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine and the Chicago Medical School.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE OF THE UNIVERSITY OF CHICAGO.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago, and in 1924 became an integral part of the University of Chicago. The first class graduated in 1844. Co-educational since 1898. The faculty is composed of 137 professors, 100 associates, instructors, etc., a total of 237. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 140 students in each of the clinical years. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years, respectively, are $280, $270, $289.50 and $297.50. The Dean is Dr. Ernest E. Irons. Total registration for 1925-1926 was 538; graduates, 141. The eighty-second session begins Oct. 1, 1926, and ends June 14, 1927.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Women students will be accepted for entrance to the medical course at the beginning of the session 1926-27. The faculty comprises 76 professors and 132 lecturers and assistants, a total of 208. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a year's internship in an approved hospital. The total fees are $300 each year. The Dean is Dr. Irving S. Cutter. The total registration for 1925-1926 was 415; graduates, 112. The sixty-seventh session begins Oct. 1, 1926, and ends June 20, 1927.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Co-educational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-three weeks each, and a year's internship in an approved hospital. The faculty is

composed of 68 professors, 140 assistants and instructors, a total of 208. The tuition fees are $165 each year for resident students and $35 extra for nonresidents. The Dean is Dr. David John Davis. The total registration for 1925-1926 was 493; graduates, 109. The forty-fifth session begins Oct. 4, 1926, and ends June 11, 1927.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Loyola University has been co-educational since 1900. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 68 professors, 45 assistants and instructors, a total of 113. The total fees are $300 each year. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1925-1926 was 369; graduates, 63. The next session begins Oct. 4, 1926, and ends June 11, 1927.

CHICAGO MEDICAL SCHOOL, an afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Co-educational since 1919. A year's internship in a hospital is required for graduation. Total registration for 1925-1926 was 147; graduates, 32. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-seven states.*

INDIANA

Indiana, population 3,060,416, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 358,819 people, except that the work of the first year is offered also at Bloomington, the seat of the university.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. Co-educational since organization. The faculty consists of 74 professors and 126 lecturers, associates and assistants, a total of 200. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees each year are $175 for residents of Indiana and $250 for nonresidents. Matriculation fee, $15; microscope fee, $5 to $7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Assistant Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1925-1926 was 377; graduates, 80. The next session begins Sept. 13, 1926, and ends June 8, 1927.

IOWA

Iowa, population 2,505,569, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,691.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language; they must also have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Co-educational since 1870. The faculty is made up of 34 professors, 46 lecturers, demonstrators and assistants, a total of 80. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $186 each year for residents of Iowa and $350 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1925-1926 was 402; graduates, 73. The fifty-seventh session begins Sept. 20, 1926, and ends June 6, 1927.

KANSAS

Kansas, population 1,813,621, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,341, and the last two years in Kansas City, which with Kansas City, Mo., has a combined population of 483,262.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Kansas City. Absorbed Kansas Medical College in 1913. Co-educational since 1880. The faculty, including lecturers and clinical assistants, numbers 116. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $125, $100, $106 and $110. For nonresidents the fees are $10 additional each year. The Dean is Dr. Harry Roswell Wahl. The total registration for 1925-1926 was 179; graduates, 37. The forty-seventh session begins Sept. 14, 1926, and ends June 6, 1927.

KENTUCKY

Kentucky, population 2,488,423, has one medical college, the University of Louisville School of Medicine, situated in Louisville, a city of 259,259 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In the fall of 1922 it became more closely correlated in the University of Louisville and changed its name to the University of Louisville School of Medicine. About the same time it assumed complete control of the professional side of the Louisville City Hospital on a twelve months' basis, under an agreement with the City Administration, the Dean becoming Chairman of the Hospital Staff Executive Committee and the Professor of Medicine the Hospital Staff Executive, with the Hospital Superintendent as business manager and secretary. Co-educational since organization. Two years of college work required for admission. It has a faculty of 23 professors, 18 associate and assistant professors, 3 lecturers, 38 instructors and 30 assistants, a total of 112. Students limited to 85 Freshmen, 64 Sophomores, 70 Juniors and 70 Seniors. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $275, $275, $280 and $300. The Dean is Dr. Stuart Graves. Total registration for 1925-1926 was 260; graduates, 59. Next session begins Sept. 13, 1926, and ends June 16, 1927.

LOUISIANA

Louisiana, having a population of 1,879,024, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 414,493.

Students who desire to practice medicine in Louisiana must complete, at an approved college or university, two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. Co-educational since 1915. The faculty has 51 professors and 90 assistant professors, instructors and assistants, a total of 141. The course covers four years of thirty-four weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $295, $285, $270 and $300. The Dean is Dr. Charles C. Bass. The total registration for 1925-1926 was 408; graduates, 83. The ninety-second session begins Sept. 23, 1926, and ends June 8, 1927.

MARYLAND

Maryland, with a population of 1,537,085, contains two medical colleges, located in Baltimore, a city with 796,296 inhabitants. They are as follows: Johns Hopkins University School of Medicine, and the University of Maryland School of Medicine and College of Physicians and Surgeons.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1893. Co-educational since organization. The first class graduated in 1897. The faculty consists of 60 professors and 195 clinical professors, etc., a total of 255. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are $410. The Dean is Dr. Lewis H. Weed. Total registration for 1925-1926 was 272; graduates, 67. The thirty-fourth session begins Sept. 27, 1926, and ends June 7, 1927.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. Co-educational since 1918. The faculty consists of 85 professors and 123 instructors and assistants, a total of 208. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are $280 each year for residents of the state; $380 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1925-1926 was 371; graduates, 70. The one hundred and twentieth session begins Sept. 27, 1926, and ends June 4, 1927.

MASSACHUSETTS

Massachusetts, population 4,127,653, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 781,529, except the last named, which is in Cambridge, a city of 120,053.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 89 professors and 243 instructors and assistants, a total of 332. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $300 plus $5 the first year for matriculation. The Dean is Dr. David L. Edsall. The total registration for 1925-1926 was 507; graduates, 128. The one hundred and forty-fourth session begins Sept. 27, 1926, and ends June 23, 1927.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Co-educational since organization. Two years of collegiate work are required for admission. The faculty includes 20 professors, 93 associates, etc., making a total of 113. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $326, $326, $326 and $336. The Dean is Dr. Alexander S. Begg. Total registration for 1925-1926 was 200; graduates, 49. The fifty-fourth session begins Sept. 20, 1926, and ends June 13, 1927.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Co-educational since 1894. It has a faculty of 54 professors and 116 assistants, lecturers, etc., a total of 170. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $305, $300, $300 and $310. The Dean is Dr. Stephen Rushmore. Total registration for 1925-1926 was 482; graduates, 110. The thirty-first session begins Sept. 22, 1926, and ends June 11, 1927.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students, 1925-1926 was about 28. There were 9 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-eight states.*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in osteopathic colleges. The total fees reported for each year are $175, plus a matriculation fee of $10. Total registration for 1925-1926 was 109; graduates, 26. *This college has been reported as not recognized by licensing boards of forty-eight states.* In connection with the medical licensure investigation in Connecticut in 1924 a drastic report in regard to this college was issued by the Special Grand Jury, March 14, 1924. (See THE JOURNAL, March 29, 1924, page 1062.)

MICHIGAN

Michigan, population 4,154,625, has two medical colleges: the University of Michigan Medical School, located at Ann Arbor, a city of 22,178 people, and the Detroit College of Medicine and Surgery, located at Detroit, a city of 1,242,044 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Candidates must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Co-educational since organization. It has a faculty composed of 20 professors, 27 assistant and associate professors and 45 associates, instructors, etc., a total of 92. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of French or German. The curriculum embraces four years of nine months each. The total fees for Michigan students are for men, $182 per year, and for women $175 per year, plus a matriculation fee of $10; for nonresidents, $80 per year additional. The matriculation fee for nonresidents is $25. The Dean is Dr. Hugh Cabot. The total registration for 1925-1926 was 541; graduates, 112. The seventy-seventh session begins Sept. 28, 1926, and ends June 20, 1927.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Co-educational since 1917. Entrance requirements are two years of college work. The faculty embraces 33 professors, 110 lecturers, etc., a total of 143. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $200; for nonresidents, $285. The Dean is Dr. W. H. MacCraken. The total registration for 1925-1926 was 199; graduates, 50. The forty-second session begins Sept. 30, 1926, and ends June 18, 1927.

MINNESOTA

Minnesota, population 2,563,550, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 425,435 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Co-educational since organization. The faculty includes 123 professors and 218 instructors and assistants, a total of 341. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading of scientific French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work has been completed. Classes are graduated three a year, in March, June and December. Total fees are $192 for residents and $222 for nonresidents, each year of the three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1925-1926 was 389; graduates, 96. The thirty-eighth session begins Sept. 27, 1926, and ends June 11, 1927. The summer quarter began June 21.

MISSISSIPPI

Mississippi, population 1,790,618, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,150 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Co-educational since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year for residents are $163; for nonresidents, $50 per year additional. The faculty numbers 17. The Dean is Dr. J. O. Crider. The total registration for 1925-1926 was 64. The twenty-fourth session begins Sept. 15, 1926, and ends June 7, 1927.

MISSOURI

Missouri, population 3,466,781, has five medical colleges. The School of Medicine of the University of Missouri is at Columbia, a town of 10,634 people. St. Louis, population 821,543, contains three medical schools, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, which, with Kansas City, Kansas, has a population of 483,262, has one college, the Kansas City University of Physicians and Surgeons. The last two are reported as not approved or reputable by the Missouri State Board of Health.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Co-educational since 1872. The faculty includes 12 professors and 17 assistant professors, lecturers, etc., a total of 29. The course covers two years of thirty-five weeks each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees each year are $110 and $113. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1925-1926 was 78. The next session begins Sept. 15, 1926, and ends June 4, 1927.

Kansas City

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title under a separate charter in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges; reported as still having osteopathic classes. The total registration for 1925-1926 was 37; graduates, 17. Rated Class C by the Council on Medical Education and Hospitals. *Reported not recognized by the licensing boards of Missouri and of forty-eight other states.*

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Co-educational since 1918. The faculty comprises 28 professors and 161 lecturers, instructors, etc., a total of 189. Three years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $349, $344, $344 and $349. The Dean is Dr. McKim Marriott. The total registration for 1925-1926 was 309; graduates, 75. The next session begins Sept. 23, 1926, and ends June 7, 1927.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 76 professors and 164 lecturers and assistants, a total of 240. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer season is optional. The total fees are $325 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1925-1926 was 502; graduates, 107. The next session begins Oct. 1, 1926, and ends June 1, 1927.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915, when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Its Dean is Dr. Waldo Briggs. The total registration for 1925-1926 was 50; graduates, 16. *This college is reported as not recognized by the licensing boards of Missouri and forty-eight other states.* This school was closely involved with the Missouri diploma mill ring which was exposed in 1923 as shown by the drastic report regarding it issued by the Connecticut Special Grand Jury, March 14, 1924. (See THE JOURNAL, April 5, 1924, page 1140.)

NEBRASKA

Nebraska, population 1,355,371, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University School of Medicine, both in Omaha, population 211,768.

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, Fourteenth and Davenport Streets.—Organized in 1892 by the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Co-educational since organization. It has a faculty of 34 professors and 44 instructors, lecturers and assistants, a total of 78. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $230, $215, $215 and $215. The Dean is Dr. Hermann von W. Schulte. Total registration for 1925-1926 was 194; graduates, 38. The forty-fifth session begins Sept. 23, 1926, and ends June 2, 1927.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. Co-educational since 1882. The faculty is composed of 48 professors and 64 lecturers and instructors, total 112. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $185, $170, $160 and $160. The Dean is Dr. J. Jay Keegan. Total registration for 1925-1926, was 274; graduates, 66. The next session begins Sept. 20, 1926, and ends June 4, 1927.

NEW HAMPSHIRE

New Hampshire, population 450,171, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 12 professors and 3 instructors, a total of 15. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $400 and $410 for the second year. The acting Dean is Colin C. Stewart, Ph.D. The total registration for 1925-1926 was 35. The next session opens Sept. 22, 1926, and ends June 21, 1927.

NEW YORK

New York State, population 11,105,625, has nine medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital, are located in New York City, population 5,927,625. Albany Medical College is located in Albany, a city of 117,820 people. The University of Buffalo Medical Department is situated in Buffalo, population 538,016. The College of Medicine, Syracuse University, is in Syracuse, a city of 182,003 inhabitants. The University of Rochester School of Medicine is located in Rochester, a city of 316,786 inhabitants.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed education control. Co-educational since 1915. The faculty is composed of 25 professors and 75 instructors, assistants, etc., a total of 100. Two years of collegiate work, including college courses in physics, chemistry

(including organic and analytic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $320, $305, $305 and $305. The Dean is Dr. Thomas Ordway. The total registration for 1925-1926 was 93; graduates, 16. The ninety-sixth session begins Sept. 28, 1926, and ends June 13, 1927.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Co-educational since organization. The faculty is composed of 60 professors and 103 lecturers, assistants, etc., a total of 163. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $327, $317, $317 and $327. The Dean is Dr. C. Sumner Jones. Total registration for 1925-1926 was 255; graduates, 47. The eighty-first session begins Sept. 20, 1926, and ends June 8, 1927.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Co-educational since 1917. The faculty is composed of 124 professors and 310 instructors, demonstrators, etc., a total of 434. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, are required for admission. The work covers four years of eight months each. The Dean is Dr. Willian Darrach. The total fees for the four years, respectively, are $527, $518, $512 and $532. Total registration for 1925-1926 was 401; graduates, 96. The one hundred and nineteenth session begins Sept. 22, 1926, and ends June 1, 1927.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. Co-educational since organization. The faculty is composed of 70 professors and 130 assistants, lecturers, instructors, etc., a total of 200. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, $500 and $525. The Dean is Dr. Walter L. Niles. Total registration for 1925-1926 was 274; graduates, 63. The twenty-ninth session begins Sept. 27, 1926, and ends June 9, 1927.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn.—Organized in 1858. The first class graduated in 1860. Co-educational since 1918. It has a faculty of 81 professors and 105 assistants, instructors, etc., a total of 186. At least two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $443, $416, $435 and $440. The Dean is Prof. Adam M. Miller. Total registration for 1925-1926 was 394; graduates, 90. The sixty-eighth session begins Sept. 27, 1926, and ends June 4, 1927.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Co-educational since 1919. The course covers four years of eight months each. It has a faculty of 52 professors and 55 lecturers and assistants, a total of 107. The total fees for the four years are, respectively, $430, $405, $395 and $410. The Dean is Dr. Claude A. Burrett. Total registration for 1925-1926 was 214; graduates, 41. The sixty-seventh session begins Sept. 17, 1926, and ends May 7, 1927.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Co-educational since 1919. The faculty is composed of 81 professors, associate professors and assistant professors, and 145 lecturers, instructors, etc., in all, 226. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years, respectively, are $535, $523, $512 and $530. The Dean is Dr. Samuel A. Brown. Total registration for 1925-1926 was 408; graduates, 88. The next session begins Sept. 15, 1926, and ends June 8, 1927.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Ave.—Organized in 1925 as the Medical Department of the University of Rochester. Co-educational since organization. The faculty is composed of 17 professors, 78 lecturers, assistants, instructors, etc., a total of 95. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $300. The total registration for 1925-1926 was 22. The Dean is Dr. George H. Whipple. The second session begins Sept. 23, 1926, and ends June 20, 1927.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Co-educational since organization. The faculty is composed of 26 professors and 115 associate and assistant professors, lecturers and instructors, a total of 141. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $330, for the fourth year $340. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1925-1926 was 173; graduates, 40. The fifty-sixth session begins Sept. 17, 1926, and ends June 13, 1927.

NORTH CAROLINA

North Carolina, population 2,759,014, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Co-educational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 8 professors and 1 instructor, a total of 9. The fees for each year are $220. The Dean is Dr. I. H. Manning. The total registration for 1925-1926 was 80. The forty-first session begins Sept. 17, 1926, and ends June 2, 1927.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 10 professors and 8 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for each year aggregate $208. The Dean is Dr. Thurman D. Kitchin. The total registration for 1925-1926 was 40. The twenty-fifth session begins Sept. 14, 1926, and ends June 3, 1927.

NORTH DAKOTA

North Dakota, population 686,424, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,811 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Co-educational since organization. Two years' work in a college of liberal arts is required for admission. The fees are about $60 each year for resident students and $100 for nonresidents. The faculty consists of 6 professors and 9 instructors, a total of 15. The Dean is Dr. H. E. French. The total registration for 1925-1926 was 51. The twenty-first session begins Sept. 18, 1926, and ends June 14, 1927.

OHIO

Ohio, population 6,321,539, has four medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 409,333 inhabitants. Cleveland, population 936,455,

contains one medical school, Western Reserve University School of Medicine. Columbus, population 279,836, contains the Ohio State University College of Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Co-educational since organization. Two years of college work are required for admission. The faculty consists of 79 professors and 129 associates, assistants, etc., a total of 208. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for each of the four years are, respectively, $372.50, $372.50, $350 and $330. The Dean is Dr. Arthur C. Bachmeyer. The total registration for 1925-1926 was 258; graduates, 55. The next session begins Sept. 27, 1926, and ends June 18, 1927.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. Co-educational since 1871. It has a faculty of 20 professors and 24 lecturers and assistants, a total of 44. Pending completion of a reorganization no new students will be admitted to any of the classes. The course covers four years of eight months each. The total fees for the four years, respectively, are $220, $210, $210 and $210. The Dean is Dr. R. L. Thomas. Total registration for 1925-1926 was 144; graduates, 38. The next session begins Sept. 16, 1926, and ends May 16, 1927.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109-15 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Co-educational since 1919. The faculty includes 19 professors and 160 lecturers, assistants, etc., a total of 179. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $325, $310, $300 and $310. The Dean is Dr. C. A. Hamann. The total registration for 1925-1926 was 220; graduates, 48. The eighty-fourth session begins Sept. 30, 1926, and ends June 16, 1927.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, University Campus. —Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Co-educational since organization. The faculty consists of 48 professors and assistant professors, 63 lecturers, instructors, demonstrators, etc., a total of 111. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $180 each year for residents of Ohio; for nonresidents, the fees are $285. The Dean is Dr. Eugene F. McCampbell. The total registration for 1925-1926 was 320; graduates, 76. The next session begins Sept. 28, 1926, and ends June 14, 1927.

OKLAHOMA

Oklahoma, population 2,253,536, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city of about 5,004 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 101,150 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Co-educational since organization. It has a faculty of 30 professors and 59 lecturers, assistants, etc., a total of 89. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $80, $75, $25 and $25. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is Dr. LeRoy Long, School of Medicine Building, Third and Stiles Street, Oklahoma City, Okla. The total registration for 1925-1926 was 165; graduates, 40. The twenty-seventh session begins Sept. 16, 1926, and ends June 7, 1927.

OREGON

Oregon, population 846,061, has one medical college, the University of Oregon Medical School, located in Portland, a city of 282,383 population.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Co-educational since organization. It has a faculty of 52 professors and 104 lecturers, assistants, etc., a total of 156. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-four weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1925-1926 was 224; graduates, 49. The fortieth session begins Sept. 28, 1926, and ends June 13, 1927.

PENNSYLVANIA

Pennsylvania, population 9,317,647, has six medical colleges. Of these, Philadelphia, having a population of 1,979,364, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 631,563.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Co-educational since 1916. The faculty consists of 68 professors, associate and assistant professors, and 168 lecturers, associates, instructors, etc., a total of 236. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students; third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees for each of the four years are, respectively, $405, $375, $375 and $375 for men and $15 less per year for women students. The Dean is Dr. William Pepper. Total registration for 1925-1926 was 473; graduates 133. The one hundred and sixty-first session begins Sept. 24, 1926, and ends June 15, 1927.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 49 professors, associate and assistant professors, and 131 associates, lecturers, demonstrators and instructors, a total of 180. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about $325 each year, with a matriculation fee of $10 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1925-1926 was 579; graduates, 144. The one hundred and second session begins Sept. 22, 1926, and ends June 3, 1927.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 17 professors and 57 assistants, lecturers, etc., in all, 74. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $255, $275, $250 and $260. The Dean is Dr. Martha Tracy. The total registration for 1925-1926 was 100; graduates, 29. The seventy-seventh session begins Sept. 29, 1926, and ends June 8, 1927.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 220-24 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical

College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 52 professors and 70 lecturers, instructors, etc., in all, 122. The work covers four years of eight and a half months each. Total fees are $325 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1925-1926 was 244; graduates, 39. The seventy-ninth session begins Sept. 27, 1926, and ends June 2, 1927.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. Co-educational since organization. The faculty numbers 20 professors and 114 associates, assistants, etc., a total of 134. Two years of college work are required for admission. The fees for each of the four years, respectively, are $295, $280, $280 and $280. The Dean is Dr. Frank C. Hammond. The total registration for 1925-1926 was 224; graduates, 51. The twenty-sixth session begins Sept. 21, 1926, and ends June 16, 1927.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Co-educational since 1899. The faculty is composed of 17 professors and 146 associates, assistants, etc., 163 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are $327.50, $312.50, $312.50 and $322.50. The Dean is Dr. Raleigh R. Huggins. The total registration for 1925-1926 was 229; graduates, 47. The forty-first session begins Sept. 20, 1926, and ends June 8, 1927.

SOUTH CAROLINA

South Carolina, population 1,779,084, has one medical college, situated in Charleston, a city of 73,125 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Co-educational from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 35 professors and 25 lecturers, instructors, etc., a total of 60. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $175 annually. The Dean is Dr. Robert Wilson. Total enrolment for 1925-1926 was 156; graduates, 38. The ninety-eighth session begins Sept. 23, 1926, and ends June 2, 1927.

SOUTH DAKOTA

South Dakota, population 666,380, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. They must also have completed a year's internship in an approved hospital.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Co-educational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $100 each year. The faculty numbers 11. The acting Dean is Dr. George R. Albertson. The total registration for 1925-1926 was 36. The twentieth session begins Sept. 15, 1926, and ends June 6, 1927.

TENNESSEE

Tennessee, population 2,424,616, has three medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 136,220. The College of Medicine of the University of Tennessee is located in Memphis, population 174,533.

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLAGE OF MEDICINE, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Co-educational since 1911. The faculty includes 54 professors and 98 assistants, instructors, etc., a total of 152. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $132, $127, $127 and $152 for residents of the state, and $100 more each year for nonresidents. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1925-1926 was 231; graduates, 47. The next session begins Sept. 27, 1926, and ends June 16, 1927.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE.—This school was founded in 1874. The first class graduated in 1875. Co-educational since September, 1925. The faculty consists of 50 professors and 98 lecturers, a total of 148. Beginning in 1925 students must have successfully completed at least three years of college work with such grades as will entitle them to receive the Bachelor's degree after one year in the School of Medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $215, $215, $215 and $240. The Dean is G. Canby Robinson. The total registration for 1925-1926 was 185; graduates, 52. The fifty-third session begins Sept. 22, 1926, and ends June 8, 1927.

MEHARRY MEDICAL COLLEGE, Colored, 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. Co-educational since 1876. The faculty is made up of 28 professors and 17 instructors, demonstrators, lecturers, etc., 45 in all. Two years' work in a college of liberal arts are required for admission. The work embraces four years of thirty-two weeks each. The total fees for the four years, respectively, are $173, $165, $165 and $185. The President is Dr. John J. Mullowney. Total registration for 1925-1926 was 225; graduates, 47. The fifty-first session begins Oct. 1, 1926, and ends May 25, 1927.

TEXAS

Texas, population 5,097,574, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 48,375 inhabitants. The Baylor University College of Medicine is located in Dallas, population 158,976.

Students intending to practice medicine in Texas must complete at least two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Co-educational since 1900, the date of organization. The first class graduated in 1901. The faculty consists of 52 professors and 56 instructors and assistants, a total of 108. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $268, $258, $248 and $248. The Dean is Dr. Walter H. Moursund. Total registration for 1925-1926 was 278; graduates, 39. The twenty-seventh session begins Oct. 1, 1926, and ends May 30, 1927.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. Co-educational since organization. It has a faculty of 19 professors and 31 lecturers and instructors, a total of 50. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The freshman class is limited to 60 students on a scholarship basis, Texans having preference. The total fees for the four years, respectively, are $198, $173, $175 and $173 for residents of the state, and $150 additional each year for nonresidents. The Acting Dean is Dr. Henry Hartman. Total registration for 1925-1926 was 224; graduates, 69. The thirty-sixth session begins Oct. 1, 1926, and ends May 31, 1927.

UTAH

Utah, population 492,478, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 130,940 people.

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least two years of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Co-educational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 6 professors and 12 lecturers and assistants, a total of 18. The fees are $150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1925-1926 was 47. The twentieth session begins Sept. 27, 1926, and ends June 6, 1927.

VERMONT

Vermont, population 352,428, has one medical school, located at Burlington, a town of 24,089 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Co-educational since 1920. It has a faculty of 23 professors and 17 lecturers, instructors, etc., a total of 40. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $245 each year for men and $5 less per year for women students. Nonresidents are charged an additional $75 each year. The Dean is Dr. James N. Jenne. The total registration for 1925-1926 was 104; graduates, 26. The next session begins Sept. 15, 1926, and ends June 16, 1927.

VIRGINIA

Virginia, population 2,449,443, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 11,211, and the Medical College of Virginia at Richmond, population 186,403.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Co-educational since the session 1920-21. It has a faculty of 27 professors and 20 lecturers, instructors, assistants, etc., a total of 47. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $255, $255, $205 and $195. Nonresidents are charged an additional $20 each year. The Acting Dean is Dr. James C. Flippin. The total registration for 1925-1926 was 241; graduates, 45. The ninety-eighth session begins Sept. 16, 1926, and ends June 14, 1927.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Co-educational since 1918. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 40 professors and 101 lecturers, instructors, etc., a total of 141. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $295, $295, $286 and $316. The Dean is Dr. Manfred Call. The total registration for 1925-1926 was 342; graduates, 81. The eighty-ninth session begins Sept. 14, 1926, and ends May 31, 1927.

WEST VIRGINIA

West Virginia, population 1,601,130, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 13,811 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a four-year high school education, two years of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Co-educational since organization. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 17. Fees: For residents of the state, $95 each year; for nonresidents, $245. Cadets pay laboratory fees only. The Dean is Dr. John N. Simpson. The total registration for 1925-1926 was 117. The next session begins Sept. 21, 1926, and ends June 14, 1927.

WISCONSIN

Wisconsin, population 2,801,008, has two medical colleges, one, the Medical School of the University of Wisconsin, located at Madison, a city of 46,385 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 509,192 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Co-educational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 51 professors and 56 lecturers, instructors, etc., a total of 107. Tuition fees: $125 per year for nonresidents of Wisconsin. Incidental and laboratory fees for both resident and nonresident students average about $100 per year. The Dean is Dr. Charles R. Bardeen. The registration for 1925-1926 was 219. The nineteenth session begins Sept. 22, 1926, and ends June 20, 1927.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Co-educational since organization. It has a faculty of 138. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively are, $313, $303, $303 and $283. The Dean is Dr. Louis F. Jermain; the Dean of students is Dr. Eben J. Carey. The registration for 1925-1926 was 263; graduates, 50. The fifteenth session begins Sept. 27, 1926, and ends June 15, 1927.

PHILIPPINE ISLANDS

The Philippine Archipelago, with a population of 11,075,674, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the University of St. Thomas College of Medicine and Surgery. They are located in the city of Manila, which in 1918 had a population of 285,500.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. Present title in 1923. The faculty includes 42 professors and 43 lecturers, assistants, etc., a total of 85. A two-year collegiate course, including courses in English, physics, chemistry, biology and either French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years, respectively, are $81, $74, $59 and $56. The Dean is Dr. Fernando Calderon. The total registration for 1925-1926 was 201; graduates, 29. The twenty-first session began about June 14, 1926, and ends about March 14, 1927.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY. Manila.—Organized in 1907. The faculty includes 27 professors and 16 assistants, instructors, etc., a total of 43. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The registration for 1925-1926 was 486; graduates, 64. The Dean is Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course, including courses in physics, chemistry and biology. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Co-educational since ... ation. Has given the complete six-year medical course since 19... The faculty includes 36 professors and 46 instructors, assistants, etc., a total of 82. Fees for each year are $202. The Dean is Dr. Allan C. Rankin. The registration for 1925-1926 was 114; graduates, 17. The fourteenth session begins Sept. 29, 1926, and ends May 13, 1927.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Co-educational since organization. The faculty includes 55 professors and 82 instructors, assistants, etc., a total of 137. The total fees for the four years, respectively, are $180, $175, $185 and $185. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr. S. Willis Prowse. Total registration for 1925-1926 was 259; graduates, 53. The next session begins Sept. 30, 1926, and ends May 30, 1927.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Co-educational since 1871. It has a faculty of 29 professors and 31 lecturers and demonstrators, a total of 60. Requires for matriculation two years of Arts and a graded course of five years, including a portion of the premedical courses in physics and chemistry. The fees are $200 each year. The total registration for 1925-1926 was 121; graduates, 35. The Dean is Dr. John Stewart. The next session begins Sept. 14, 1926, and ends May 17, 1927.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. Co-educational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 64 professors and 202 lecturers, associates, etc., a total of 266. The fees are $163 for the first five years and $191 for the sixth year. The Dean is Dr. Alexander Primrose. The total registration for 1925-1926 was 777; graduates, 193. The next session begins Sept. 28, 1926, and ends May 28, 1927.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became a part of Queen's University. The faculty numbers 48. The fees for the six years are, respectively, $148, $151, $146, $160, $160, and $180. The last includes the fee of $30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics. The total registration in 1925-1926 was 309; graduates, 52. The Dean is Dr. J. C. Connell. The next session begins Sept. 29, 1926, and ends May 25, 1927.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London, Ontario.—Organized in 1881 as the Western University, Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Co-educational since 1913. The faculty numbers 71. Two years of premedical college work, including courses in physics, chemistry and biology, are required for admission to a four year medical course—all of which are referred to as a six year medical course. The total fees for the last four years, respectively, are $140, $140, $148 and $173. The Dean is Dr. Paul S. McKibben. Total registration for 1925-1926 was 109; graduates, 19. The next session begins Sept. 22, 1926, and ends May 27, 1927.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Co-educational since 1919. The course consists of two premedical years, four medical years of eight months each, and a fifth year of hospital intern work. The faculty consists of 50 professors and 119 lecturers, etc., a total of 169. The total fees for each of the four medical years are $277, $232, $232 and $232, respectively. The total registration for 1925-1926 was 472; graduates, 97. The Dean is Dr. C. F. Martin. The next session begins Sept. 20, 1926, and ends April 29, 1927.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name, by act of Parliament, in 1920. A class was graduated in 1843 and in each subsequent year. One woman student admitted in the fall 1925. The faculty numbers 89. The course extends over six years, including preliminary courses in physics, chemistry and biology. The total fees for each of the five years, respectively, are $207, $200, $242, $214 and $207. The Dean is Louis de Lothiniere Harwood. The total registration for 1925-1926 was 173; graduates, 12. The next session begins Sept. 15, 1926, and ends June 15, 1927.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 57. The fees are $150 each year. The course extends over six years, including preliminary courses in physics, chemistry and biology. The Secretary is Dr. Arthur Vallée, Quebec. Total registration for 1925-1926 was 220; graduates, 39.

GRADUATE MEDICAL EDUCATION IN THE UNITED STATES

Revised to Aug. 21, 1926

The Council's chief desire is to cooperate with postgraduate teaching institutions and hospitals, providing residences in the specialties and bringing about a general adoption of the principles concerning graduate medical education which were endorsed by the House of Delegates of the American Medical Association in June, 1923.

There is no desire to prevent any physician from getting any course he needs, nor to assume authority over any individual or any graduate teaching institution, nor to prevent them from offering to physicians any courses they see fit. If an institution desires to have the Council's endorsement of its work or of any particular course offered, however, it should not be unwilling to comply with the principles which are presented herewith and which are believed to be fair and just.

The principles aim to provide more abundant facilities for the training of general practitioners; the fact being recognized that any course of instruction which will improve the physician's knowledge or skill will be of service, both to him and to his patients. At the same time, it is believed that much better instruction will be furnished if the courses are arranged in a graded series whereby he can progress from one course to another and know that he is continually advancing in his work.

From courses leading to the specialties in graduate schools and in hospitals, the council is withholding its approval where arrangements are such that physicians are enabled to rush into some specialty without having developed the knowledge and skill which would justify such action. Here again, there is no attempt to prevent any physician from taking any course he desires, nor to hinder an individual or institution from offering instruction in any course. The Council merely asks that such courses be given in accordance with certain principles if they are to have the Council's endorsement.

The principles apply chiefly to certain courses which, to a deplorable extent, are being used as short-cuts to the practice of specialties by many who do not obtain therefrom the proficiency which should be required. Neither the American Medical Association nor any other body of self-respecting people would endorse such a procedure; nor should they appear to do so by failing to do what they can to prevent it. The Council is withholding its approval from certain courses until adequate safeguards against their abuse have been established by the institutions offering such courses. These safeguards can be established without much difficulty by the graduate medical schools, (*a*) by having their courses properly graded; (*b*) by ascertaining the educational and professional qualifications of the physician-students, (*c*) by offering the operation course as one of a group of courses which includes review and diagnostic courses all of which are given for a common fee, and (*d*) by admitting to any course only those students who are found to possess the essential prerequisite

work or training. Such grading is, indeed, more essential for graduate students than for undergraduates, since the qualifications of the former now vary to a greater extent.

The courses most commonly utilized as short cuts are the operative courses, such as operative surgery on the dog or the cadaver and like courses in orthopedic surgery, urology, gynecology, ophthalmology and otolaryngology.

As now given, most of these courses do not provide even the minimum requisite knowledge of diagnostic, laboratory or operative technic, much less the essential review courses in the preclinical sciences; the needed experience in the examination of patients; the diagnosis of the diseases covered by the specialty, and particularly the recognition of conditions which require operative treatment. Furthermore, some of the courses offered are independent of and make no provision for residencies or assistantships where the graduate student can subsequently develop skill in applying his special knowledge in the care and treatment of patients while still under the supervision of a recognized expert in the particular specialty before he begins his operative procedures in his own independent practice. These principles apply particularly to the surgical specialties and to the application of operative procedures, since an unnecessary surgical operation, on the eye, for example, may handicap a patient for the balance of his lifetime. The portion of the principles regarding graduate medical schools which bear on this particular matter is given in paragraph 4.

Where courses leading to specialization in any of the subjects enumerated are properly graded, and where the graduate school carefully investigates the previous training of the individual physician before assigning him to courses of instruction, it will not matter so much whether the student is merely preparing himself for better work in his general practice, or whether he is intending later to practice as a specialist.

The investigations during the last few years of the various postgraduate medical schools have revealed a deplorable lack of courses to which any standardizing body could give an unqualified approval because they are not graded and are not administered in accordance with any definite principles or standards. It is gratifying to note that the postgraduate teaching institutions have largely abandoned the giving of diploma-like certificates to students taking short courses.

It is the Council's desire to cooperate most heartily with any institution in an effort to develop its graduate teaching so as to provide in the United States more well organized and well administered courses of graduate medical instruction. This is clearly the greatest need in medical education today.

PRINCIPLES REGARDING GRADUATE OR POSTGRADUATE MEDICAL SCHOOLS

The following principles were adopted by the House of Delegates in June, 1923, as a basis for the grading of graduate medical schools:

1. *Admission Requirements.*—The minimum admission requirement for those wishing to prepare themselves for the practice of a specialty should be graduation from an acceptable (Class A) medical college and completion of at least one year's internship in an approved hospital, or the experience gained by at least five years spent in the active practice of medicine. In the case of reputable physicians who desire to improve themselves for general practice, lenient admission requirements are justified. Courses for *general practitioners* should be open to all physicians who have received the degree of Bachelor or Doctor of Medicine from medical colleges considered acceptable by this Council, or to reputable physicians who were licensed in certain states before graduation was required.

2. *Records.*—Records should be kept by each institution showing (*a*) the preliminary and professional entrance qualifications of every student, which should be verified by authentic or documentary evidence; (*b*) previous attendance at graduate courses and subjects taken; (*c*) the subjects for which he is enrolled; (*d*) evidence of his faithful attendance at his work; (*e*) evidence of the student's proficiency as demonstrated by research work, examinations or otherwise, and (*f*) whether an advanced degree or certificate was granted.

3. *Supervision.*—There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals as determined by the present day needs of graduate medical education.

4. *Curriculum and Grading of Instruction Offered.*—The graduate school should have its various courses of instruction so graded that the student, if he desires, can obtain progressive work in a continuous course of two or three years,[1] as may be necessary to prepare him satisfactorily for the practice of a chosen specialty. If it is found that at some previous time the student has satisfactorily completed certain portions of the work, he might be given advanced standing and thereby enabled to complete his preparation in a shorter time.

Where short operation courses are offered in any of the clinical specialties, they should be combined with review, diagnostic and clinical courses arranged either in one group for which a common fee is charged, or in a graded series so that, in effect, they would be segments of and, in total, the time and educational equivalent of the longer courses. These segments might be taken at different times, but would ultimately lead the student to the same objective. With the exception of the courses in general medicine, all short courses should fit in with a scheme, the ultimate aim of which would be a complete and satisfactory training in the specialty for which the graduate school provides instruction. Any institution offering work in any specialty, therefore, should provide (*a*) review courses in anatomy, pathology and the other basic preclinical sciences which apply to the respective specialties; (*b*) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated; (*c*) courses of operative and laboratory technic; and (*d*)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician who is recognized as an expert in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick. Opportunity should be provided also for research work in the chosen specialty bearing on both the fundamental sciences and clinical fields. With courses so graded, no student should be admitted to any advanced short course unless, on careful investigation, he is found to possess the knowledge and skill, such as are obtainable in the other prerequisite courses.

5. *Teachers.*—The graduate medical school should be supplied with a corps of teachers well trained in and responsible for the work in all subjects in which opportunities for study are announced. This should include teachers for essential review or advanced work in the preclinical sciences, as well as those who have in charge work in clinical subjects. The teaching staff should be made up of graduates of or teachers in Class A medical colleges or other high grade educational institutions. The faculty should be organized under the various teaching departments in which work is offered, and a competent teacher should be at the head of each department.

6. *Laboratories.*—The school should possess well-equipped both laboratory and clinical subjects essential for the specialty or specialties in which opportunities are offered. There should also be an adequate supply of special apparatus, such as stereopticons, balopticons, photomicrographic outfits and roentgen-ray equipment.

1. The several fields of clinical specialization which are referred to are shown in the following list. Following completion of an internship in a general hospital, the minimum years designated after each subject represent what were considered as essential to insure efficiency in the various specialties by the Committees on Graduate Medical Instruction in their reports which were presented at the Annual Conference on Medical Education, held in Chicago, March 7, 1921:

Field	Years Essential	Field	Years Essential
(a) Surgery, General	3	(g) Internal Medicine	3
(b) Surgery, Orthopedic	3	(h) Pediatrics	3
(c) Surgery, Genito-Urinary	3	(i) Neuropsychiatry	3
(d) Gynecol. and Obstet.	3	(j) Dermatology	2
(e) Ophthalmology	2	(k) Public Health and Hygiene	2
(f) Otolaryngology	2		

7. *Library and Museum Facilities.*—The graduate school should have a medical library which should include an ample supply of modern text and reference books, files of bound medical periodicals, and the essential indexes. It should also receive regularly thirty or more standard medical periodicals, the latest numbers of which should be on tables or in racks where they are easily accessible to the graduate students. The school should be supplied also with adequate museum facilities, including anatomic and pathologic specimens.

8. *Hospitals and Dispensaries.*—The graduate medical school should have a teaching hospital with a daily average of 200 or more patients, and an outpatient clinic with an average of 100 or more patients each day; or, if teaching is limited to a single specialty, a hospital of not less than twenty-five patients daily, and an outpatient clinic of at least fifty patients daily. In brief, it should have sufficient clinical material to enable it to provide satisfactory clinical study in the specialty or specialties for which opportunities are offered. In connection with the courses for general practitioners, ample clinical material should be available so that the student may be given the opportunity personally to examine patients in hospital wards and in the outpatient department, and to make the essential laboratory examinations.

9. *Annual Announcements.*—The graduate school should publish annually announcements, bulletins or catalogues giving detailed information in regard to its teachers, laboratories, dispensaries and hospitals; outlines of the various opportunities for study offered in both fundamental and clinical branches; a complete list of the students enrolled during the last preceding year, showing their medical schools and years of graduation, the subjects for which they registered and the time spent in each, and a list of those to whom advanced degrees or diploma-like certificates were granted.

10. *Advanced Degrees, Diplomas, Certificates.*—No advanced degree or diploma-like certificate should be granted to any one who is not known to be proficient in the specialty pursued; nor to any one, under any circumstances, who has not completed at least one academic year in full-time study of a single special subject in the institution granting the certificate; and unless scholarship records of the student show that, throughout the period, he has faithfully attended to his work, and unless reasonable tests show that he has diligently and satisfactorily completed the work for which he was registered.

APPROVED GRADUATE MEDICAL SCHOOLS

Revised to Aug. 21, 1926

ALBANY MEDICAL COLLEGE, Albany, N. Y.—Courses in Infectious Diseases and Public Health. Dr. Chas. C. Duryee, Director.

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, Dallas, Texas.—Summer Courses for General Practitioners. Dr. W. H. Moursund, Dean.

CHICAGO POLICLINIC, North Clark and Oak St.—Courses in Venereology, Urology and Dermatology. Dr. M. L. Harris, Secretary.

COLORADO SCHOOL OF TUBERCULOSIS, Colorado Springs, Colorado.—Dr. G. Burton Gilbert, Secretary, 402 Burns Bldg., Colorado Springs.

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, New York.—Higher Degrees and General Practice Courses. Special Summer Course in Public Health (U. S. P. H. S.). Dr. William Darrach, Dean.

CORNELL UNIVERSITY MEDICAL COLLEGE, New York.—Higher Degree and General Practice Courses. Dr. Walter L. Niles, Dean.

DETROIT COLLEGE OF MEDICINE AND SURGERY, Detroit, Mich.—Course in Public Health. Dr. I. Werness, Registrar.

HARVARD MEDICAL SCHOOL, Courses for Graduates, Boston.—Basic Review and General Practice Courses. Dr. Samuel R. Meaker, Dean.

HERMAN KNAPP MEMORIAL EYE HOSPITAL, School of Ophthalmology, 500 W. 57th St., New York City.—Courses in Diseases of the Eye. Dr. Gerald H. Grout, Secretary.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Washington, D. C.—Courses for General Practitioners. Dr. Edward A. Balloch, Dean.

INDIANA UNIVERSITY SCHOOL OF MEDICINE, INDIANAPOLIS.—Higher Degree Courses. Dr. Charles P. Emerson, Dean.

JOHNS HOPKINS MEDICAL SCHOOL, Baltimore.—School of Public Health. Dr. William H. Welch, Director.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge.—Higher Degrees in Public Health. Dr. Henry Paul Talbot, Dean.

NEUROLOGICAL INSTITUTE, 149 E. 67th St., New York City.—Clinical Clerkships. Dr. E. G. Zabriskie, Secretary, Medical Board.

NEW HAVEN SCHOOL OF PHYSIOTHERAPY, 303 Whitney Ave., New Haven, Conn.—Dr. Harry Eaton Stewart, Director.

NEW YORK EYE AND EAR INFIRMARY, SCHOOL OF OPHTHALMOLOGY AND OTOLOGY, 13th St., Corner Second Ave., New York City.—Courses in Ophthalmology and Otology. Mr. Webb W. Weeks, Secretary.

NEW YORK POLYCLINIC MEDICAL SCHOOL AND HOSPITAL, 341 to 351 West 50th St., New York City.—Courses for general practitioners. Dr. J. A. Kearney, Executive Officer.

NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, Second Avenue and Twentieth St., New York City.—Special Internships and General Practice Courses. Dr. William D. Cutter, Dean.

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Columbus.—Course in Public Health. Dr. E. R. Hayhurst, Head of Dept. of Public Health.

PHYSIATRIC INSTITUTE, Morristown, New Jersey.—Diabetes and Other Metabolic Diseases. Dr. Frederick M. Allen, Director.

ROBERT DAWSON EVANS DEPARTMENT OF CLINICAL RESEARCH AND PREVENTIVE MEDICINE (BOSTON UNIVERSITY SCHOOL OF MEDICINE), 80 E. Concord St., Boston.—Courses in Endocrinology. Dr. Allan Winter Rowe, Chief of Research Service.

STANFORD UNIVERSITY SCHOOL OF MEDICINE, San Francisco.—Summer Courses for Graduates and Residencies in Medicine and Otolaryngology. Dr. William Ophuls, Dean.

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, Iowa City.—Summer Courses in Public Health (U. S. P. H. S.). Dr. Lee Wallace Dean, Dean.

TRUDEAU SCHOOL OF TUBERCULOSIS, Saranac Lake, New York.—Courses for General Practitioners. Dr. E. R. Baldwin, Director.

TULANE UNIVERSITY GRADUATE SCHOOL OF MEDICINE (New Orleans Polyclinic), New Orleans.—Higher Degrees, Fellowships and General Practice Courses. Dr. Edmund D. Martin, Dean.

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, Buffalo, N. Y.—Summer Courses for General Practitioners. Dr. C. Sumner Jones, Dean.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, New York City.—Special Courses in Surgery. Dr. John Wyckoff, Secretary.

UNIVERSITY OF CALIFORNIA GRADUATE DIVISION, Berkeley-San Francisco. —Higher Degree and Public Health Courses (U. S. P. H. S.). Dr. Charles B. Lipman, Dean.

UNIVERSITY OF CHICAGO, RUSH MEDICAL COLLEGE, Wood and Harrison Sts., Chicago.—Special and Higher Degree Courses and Residencies. Courses in Otolaryngology are now offered and others are being organized. Dr. Ernest E. Irons, Dean.

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Cincinnati.—Fellowships in Surgery. Dr. Fredk. C. Hicks, President.

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, Denver.—Course in Ophthalmology. Dr. Maurice H. Rees, Dean.

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, Augusta.—Courses in Public Health. Dr. William H. Goodrich, Dean.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Chicago. — Higher Degree Courses. Dr. David John Davis, Dean.

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL, Ann Arbor. — Summer Courses in Public Health (U. S. P. H. S.). Dr. Hugh Cabot, Dean.

UNIVERSITY OF MINNESOTA GRADUATE SCHOOL OF MEDICINE, Minneapolis-Rochester.—Higher Degree Fellowships and General Practice Courses. Dr. Guy Stanton Ford, Dean.

UNIVERSITY OF PENNSYLVANIA GRADUATE SCHOOL OF MEDICINE, Philadelphia.—Higher Degree and General Practice Courses. Dr. George H. Meeker, Dean.

UNIVERSITY OF PORTO RICO SCHOOL OF TROPICAL MEDICINE, San Juan, Porto Rico.—(Under the auspices of Columbia University. Dr. William Darrach, Dean.)

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, Galveston. — Summer Courses for General Practitioners. Dr. William Keiller, Dean.

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, Madison. — Course in Public Health. Miss G. K. McRae, Secretary.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, St. Louis.—Courses in Otolaryngology, Pediatrics, Infant Feeding, Obstetrics and Diseases of the Heart. Dr. McKim Marriott, Dean.

YALE UNIVERSITY SCHOOL OF MEDICINE, New Haven, Conn.—Residencies and General Practice Courses. Dr. Milton C. Winternitz, Dean.

Bath.—ROYAL UNITED HOSPITAL.—Course of six clinical demonstrations given each autumn on Saturday afternoons. R. G. Gordon, Hon. Sec., Postgraduate Committee, 9, The Circus, Bath, England.

Berlin.—UNIVERSITY OF BERLIN MEDICAL FACULTY, Berlin, Germany.—Courses in Diseases of the Digestive Tract, Syphilis and Advanced Courses in Specialties. Further information and detailed prospectus may be secured by applying to the "Geschaftsstelle," Berlin, N. W. 6., Luisenplatz 2-4 Kaiserin Friedrich-Haus.

Birmingham.—UNIVERSITY OF BIRMINGHAM.—Clinical demonstrations on medical and surgical cases, skin diseases, ophthalmic cases, children's diseases, etc., given at the General Hospital and at Queen's Hospital. Ten lectures in morbid psychology from April to July. Address W. F. Haslam, Esq., M.B., F.R.C.S., The University, Edmund Street, Birmingham, England.

Bordeaux.—UNIVERSITY OF BORDEAUX, France.—Special Courses in Otorhinolaryngological Surgery, Bronchoscopy, Plastic, Mastoid and Neck Surgery. For information apply to Dr. Leon Felderman, 4428 York Rd., Philadelphia, Pa.

Bristol.—UNIVERSITY OF BRISTOL.—Clinical assistantships in all branches of hospital practice. Write to the Director of Postgraduate Studies (Clinical Section), Pathological Dept., University of Bristol, England.

Cambridge.—ADDENBROOKE'S HOSPITAL.—Operations and demonstrations in the clinical or biochemistry laboratories held every alternate autumn. Write Dr. J. Aldren Wright, 54 Trumpington Street, Cambridge, England.

Glasgow.—UNIVERSITY OF GLASGOW.—Postgraduate courses. Summer months (June to October). (1) General Medical and Surgical Course. (2) Special Clinical Courses and (3) Clinical Assistantships. Winter months demonstrations in Medicine, Surgery, Obstetrics and Ophthalmology. Address the Secretary, Glasgow Postgraduate Medical Association, The University, Glasgow, Scotland.

London.—HOSPITAL FOR SICK CHILDREN, Great Ormond St., London, W. C. 1, England.—Special Graduate Course in Pediatrics. Address, Oswald L. Addison, Dean, Medical School.

London.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (UNIVERSITY OF LONDON), 23 Endsleigh Gardens, Euston Rd., London, N. W. 1. For Prospectus and Calendar apply to the Secretary.

London.—NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, Bloomsbury, W. C. 1, England.—Special Courses and Lectures on the Nervous System. Dr. J. G. Greenfield, Dean, Medical School.

London.—NORTH-EAST LONDON POST GRADUATE COLLEGE (Prince of Wales General Hospital, Tottenham, N. 15).—Special clinical demonstration in the wards; lecture hall, out-patient departments and affiliated hospitals. Special intensive courses of two week's duration are held at intervals throughout the year. Address the Dean.

London.—UNIVERSITY OF LONDON, University Extension Dept., London, England.—Course of Lectures on Medical Hydrology. Dr. Halburt J. Waring, Dean.

London.—THE FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION, 1, Wimpole St., London, W. 1, with which are associated some forty General and Special Hospitals in London, is prepared to offer Fellowships and Courses for General Practitioners. Full information may be obtained on application to Dr. Arthur J. Whiting, Honorary Secretary.

London.—WEST LONDON POST GRADUATE COLLEGE, Hammersmith Broadway, W. 6.—Clinical clerkships for graduate physicians obtainable in the various departments. Address the Dean.

Manchester.—ROYAL INFIRMARY.—Lectures and demonstrations on medical, surgical and special subjects given each autumn and spring. Write to E. Bosdin Leech, M.D., 16 St. John Street, Manchester, England.

Paris.—INTERNATIONAL CLINICS OF OTO-RHINO-LARYNGOLOGY AND FACIO-MAXILLARY SURGERY, St. Louis Hospital, Paris, France.—Courses in Oto-Rhino-Laryngology and Surgery. Applications or inquiries may be addressed to Dr. J. Eastman Sheehan, 636 Fifth Ave., New York.

St. Andrews.—JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews, Scotland.—Courses for General Practitioners. For further information write to Dr. J. Hunter Paton, Secretary.

Sheffield.—UNIVERSITY OF SHEFFIELD.—Lectures and demonstrations on general and special subjects given each year. Work mainly clinical and practical. Write to the Hon. Secretary, Committee of Clinical Studies, University, Sheffield, England.

HOSPITALS PROVIDING APPROVED RESIDENCIES IN CERTAIN SPECIALTIES

BARNES HOSPITAL, 600 S. Kingshighway, St. Louis.—Residencies in the specialties, Internal Medicine, Obstetrics, Surgery and Gynecology. Dr. L. H. Burlingham, Med. Supt.

BLOOMINGDALE HOSPITAL FOR MENTAL DISEASES, White Plains, New York.—Courses in Psychiatry. Dr. W. L. Russell, Med. Dir.

BOSTON PSYCHOPATHIC HOSPITAL, 74 Fenwood Rd., Boston 17, Mass.—Residencies in Neurology and Psychiatry. Dr. Karl M. Bowman, Chief Medical Officer.

CHILDREN'S HOSPITAL, 4616 Sunset Blvd., Los Angeles, Calif.—Residencies in Pediatrics. Miss Lilla V. Swift, R.N., Supt.

CHILDREN'S HOSPITAL, 13th and W Sts., N. W., Washington, D. C.—Residencies in Pediatrics. Miss Mattie M. Gibson, R.N., Supt.

CHILDREN'S HOSPITAL OF MICHIGAN, 5224 St. Antoine Street, Detroit.—Residencies in Pediatrics. Miss Margaret A. Rogers, R.N., Supt.

CHILDREN'S HOSPITAL, 18th and Bainbridge Sts., Philadelphia, Pa.—Residencies in Pediatrics. Miss Susan C. Francis, Supt.

CHILDREN'S MEMORIAL HOSPITAL, 735 Fullerton Ave., Chicago.—Special Courses in Infant Feeding, Pediatrics and Otolaryngology. Joseph Brennemann, Chief of Staff.

COLORADO PSYCHOPATHIC HOSPITAL, 4200 E. Ninth Ave., Denver.—Residencies in Neuropsychiatry. Dr. Franklin E. Ebaugh, Director.

COOK COUNTY HOSPITAL, Harrison and Wood Sts., Chicago.—Residencies in Eye, Ear, Nose and Throat, Contagious, Skin and Venereal Diseases, Obstetrics, Medicine, Pediatrics, Surgery, (a) Fracture, (b) Oral. Mr. Michael Zimmer, Warden.

ELIZABETH STEEL MAGEE HOSPITAL, Forbes and Market Sts., Pittsburgh, Pa.—Residencies in Obstetrics and Gynecology. Miss Jesse J. Turnbull, R.N., Supt.

FITZSIMONS GENERAL HOSPITAL, Denver, Colo. Special Residencies in Tuberculosis. Address Commanding Officer.

GRACE HOSPITAL, 4160 John R. St. and Willis Ave., E., Detroit, Mich.—Residencies in General Surgery, Internal Medicine, Obstetrics and Gynecology. Dr. W. L. Babcock, Director.

HARLEM EYE AND EAR HOSPITAL, 127th St. and Lexington Ave., New York City.—Residencies in Eye, Ear, Nose and Throat. Dr. Charles B. Meding, Med. Dir.

HOSPITAL FOR JOINT DISEASES, Madison Ave. from 123d to 124th Sts., New York City.—Residencies in Orthopedic Surgery, and Physical Therapy. Dr. Henry W. Frauenthal, Medical Director.

ILLINOIS EYE AND EAR INFIRMARY, 904 W. Adams St., Chicago.—Residencies in Ophthalmology and Otology. Dr. Leo Steiner, Managing Officer.

JAMES WHITCOMB RILEY HOSPITAL FOR CHILDREN, Indianapolis, Ind.—Residencies in Pediatrics. Dr. Robert E. Neff, Administrator.

JEFFERSON CLINIC AND DIAGNOSTIC HOSPITAL, 2201 Jefferson Ave., E., Detroit, Mich.—Special Residencies in General Surgery. Mr. Carl I. Johnson, Supt.

JOHNS HOPKINS HOSPITAL, Baltimore.—Residencies in the specialties. Dr. Winford H. Smith, Director.

LAKESIDE HOSPITAL, 1235 Lakeside Ave., Cleveland, Ohio.—Residencies in Surgery. Dr. A. B. Denison, Med. Dir.

LOUISVILLE CITY HOSPITAL, Preston and Chestnut Sts., Louisville, Ky.—Residencies in Medicine, Surgery, Pathology and Pediatrics. Ernest Shouse, Supt.

MANHATTAN EYE, EAR AND THROAT HOSPITAL, 210 E. 64th St., New York City.—Special Internships in Eye and in Ear, Nose and Throat. Mr. Reuben O'Brien, Supt.

MANHATTAN MATERNITY AND DISPENSARY, 327 E. 60th St., New York City.—Special Residencies in Obstetrics. Miss Agnes Martin, R.N., Supt.

MASSACHUSETTS EYE AND EAR INFIRMARY, 243 Charles St., Cor. Fruit St., Boston.—Special Internships in Eye, and in Ear, Nose and Throat. Dr. Frederic A. Washburn, Med. Dir.

MEMORIAL HOSPITAL FOR THE TREATMENT OF CANCER AND ALLIED DISEASES, 106th St. and Central Park West, New York City.—Residencies in Cancer. Mr. George F. Holmes, Supt.

MILWAUKEE CHILDREN'S HOSPITAL, 219—10th St., Milwaukee, Wis.—Special Residencies in Pediatrics. Miss B. M. Henderson, R.N., Supt.

MINNEAPOLIS GENERAL HOSPITAL, 6th Avenue and 5th Street, Minneapolis, Minn.—Residencies in Medicine, Surgery, Pediatrics, Obstetrics and in Eye, Ear, Nose and Throat. Dr. Walter E. List, Med. Supt.

MISERICORDIA HOSPITAL, 2224 Chestnut St., Milwaukee, Wis.—Special Residencies in Obstetrics. Sister St. Estelle, Supt.

MONTEFIORE HOSPITAL, Gun Hill Road near Jerome Ave., New York City.—Special Residencies in Medicine, Neurology, Tuberculosis and Orthopedic Surgery. Dr. Ernst P. Boas, Med. Dir.

MOUNT SINAI HOSPITAL, Fifth Ave. and 100th St., New York City.—Courses in Internal Medicine and Pediatrics, Surgery, Gynecology and Dietetics, Dermatology, Neurology, Psychiatry, Ophthalmology, Otology and Surgical Pathology. Write to the Secretary for Medical Instruction, 1 E. 100th St.

NATIONAL JEWISH HOSPITAL, 3800 E. Colfax Ave., Denver, Colo.—Residencies in Tuberculosis. Dr. Felix Bazin, Med. Dir.

NEW HAVEN HOSPITAL, 330 Cedar St., New Haven, Conn.—Special Residencies in Gynecology, Medicine and Obstetrics. Mr. Albert W. Buck, Supt.

NEW YORK EYE AND EAR INFIRMARY, Second Ave., Corner 13th St., New York City.—Special Residencies in Ophthalmology and Otology. Mr. Thomas K. Robertson, Supt.

NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL, 430 East 59th St., New York City.—Residencies in Orthopedic Surgery. Miss Theodora S. Root, Supt.

NEW YORK POST-GRADUATE HOSPITAL, Second Avenue and Twentieth St., New York City.—Special Internships and General Practice Courses. Dr. William D. Cutter, Dean.

NEW YORK SKIN AND CANCER HOSPITAL, 2nd Ave. and 19th St., New York City.—Courses for General Practitioners. Miss Sara Burns, R.N., Supt.

NEW YORK SOCIETY FOR THE RELIEF OF THE RUPTURED AND CRIPPLED, 321 East 42nd St., New York City.—Special Courses in Orthopedic Surgery. Dr. Joseph D. Flick, Supt.

PENNSYLVANIA HOSPITAL, 4401 Market St., Philadelphia.—Courses in Neurology and Psychiatry. Dr. Earl D. Bond, Physician in Chief.

PETER BENT BRIGHAM HOSPITAL, 721 Huntington Ave., Boston.—Special Courses in Medicine, Surgery, Pathology and Roentgenology. Dr. J. B. Howland, Med. Supt.

PRESBYTERIAN HOSPITAL, San Juan, Porto Rico.—Courses in Tropical Medicine. Dr. Gaetz R. Burke, Assoc. Med. Director.

PROVIDENCE CITY HOSPITAL, Eaton St., Providence, Rhode Island.—Courses in Contagious Diseases. Dr. D. L. Richardson, Med. Supt.

SOUTHERN PACIFIC HOSPITAL, Bishop and Thomas Sts., Houston, Texas.—Residencies in Surgery. Dr. H. K. Morrison, House Surgeon.

SOUTH VIEW HOSPITAL, 18th Ave and Mitchell St., Milwaukee, Wis.—Courses in Contagious Diseases. Dr. M. R. French, Med. Supt.

STATE HOSPITAL FOR MENTAL DISEASES, Howard, Rhode Island.—Courses in Neurology. Dr. Arthur H. Harrington, Med. Supt.

ST. ELIZABETH'S HOSPITAL, Claremont and LeMoyne Sts., Chicago.—Summer Courses in Clinical Medicine. Sister M. Cordula, Supt.

ST. FRANCIS HOSPITAL, Bush and Hyde Sts., San Francisco, Calif.—Residencies in General Practice. Dr. L. B. Rogers, Managing Director.

ST. LOUIS CHILDREN'S HOSPITAL, 500 S. Kingshighway, St. Louis.—Residencies in Pediatrics. Dr. L. H. Burlingham, Med. Supt.

ST. MARY'S, COLONIAL, KAHLER, WORRELL AND DAMON HOSPITALS, Rochester, Minn.—Services in these hospitals form part of the Fellowships in the University of Minnesota Graduate Medical School. See list of Approved Graduate Medical Schools.

UNIVERSITY HOSPITAL (University of Minnesota), Church and Union Sts., S. E., Minneapolis.—Residencies in Medicine, Surgery, Pediatrics, Obstetrics, and in Eye, Ear, Nose and Throat. Dr. L. B. Baldwin, Med. Supt.

WILLS HOSPITAL, Philadelphia.—Residencies, 16 Months, in Ophthalmology. Mr. Stephen Wierzbicki, Supt.

Graduate Courses in Medical Subjects and Residencies in Specialties

WHERE THESE COURSES MAY BE OBTAINED

ANATOMY

Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
Tulane University Graduate School of Medicine (Fellowships, Review and Short Courses).
University of California Graduate Division, Berkeley (for advanced students).
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

ANESTHESIA

Harvard Medical School.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
University and Bellevue Hospital Medical College.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.

BACTERIOLOGY
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

BIOCHEMISTRY
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

BRONCHOSCOPY
Columbia University College of Physicians and Surgeons.
University of Pennsylvania Graduate School of Medicine.

CANCER
Memorial Hospital, New York City (Residencies).
New York Skin and Cancer Hospital.

CARDIOLOGY
Harvard Medical School.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Yale University School of Medicine.

CONTAGIOUS DISEASES
Cook County Hospital, Chicago (Residencies).
Providence City Hospital, Rhode Island (Residencies).
South View Municipal Hospital, Milwaukee.
University of California Graduate Division, Berkeley (Residencies).
Yale University School of Medicine.

DENTAL SURGERY
Mayo Foundation, Rochester, Minn. (Fellowships).

DERMATOLOGY
Chicago Policlinic.
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Harvard Medical School.
Johns Hopkins Hospital (Residencies).
Mount Sinai Hospital, New York City (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Skin and Cancer Hospital.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

DIABETES
Columbia University, College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
University of Pennsylvania Graduate School of Medicine.

DIAGNOSIS (Laboratory and Physical)
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Herman Knapp Memorial Hospital, New York City.
Howard University School of Medicine.
New York Post-Graduate Medical School and Hospital.
Tulane University Graduate School of Medicine.
University of Minnesota Graduate School of Medicine.
Washington University School of Medicine.

DIETETICS
Mount Sinai Hospital, New York.

ELECTRO-THERAPEUTICS
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
University of Pennsylvania Graduate School of Medicine.

ELECTROCARDIOGRAPHY—(See Cardiology)

ENDOCRINOLOGY
Robert Dawson Evans Dept. of Clinical Research and Preventive Medicine (Boston University School of Medicine).

GASTRO-ENTEROLOGY
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.

GENERAL PRACTICE
St. Francis Hospital, San Francisco (Residencies).

GENITO-URINARY—(See Urology)

GYNECOLOGY
Barnes Hospital, St. Louis (Residencies).
Columbia University College of Physicians and Surgeons.
Elizabeth Steel Magee Hospital, Pittsburgh (Residencies).
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
Mount Sinai Hospital, New York (Residencies).
New Haven Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

HYGIENE—(See Public Health)

IMMUNOLOGY
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

INDUSTRIAL MEDICINE
Detroit College of Medicine and Surgery.
Ohio State University College of Medicine.
University of California, Graduate Division, Berkeley.
Yale University School of Medicine.

INFANT FEEDING
Children's Memorial Hospital, Chicago.
Columbia University College of Physicians and Surgeons.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

INSULIN TREATMENT—(See Diabetes)

INTERNAL MEDICINE—(See Medicine)

INTUBATION
University of Pennsylvania Graduate School of Medicine.

LARYNGOLOGY AND RHINOLOGY
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris, France).
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of Berlin Medical Faculty.
University of Bordeaux, France.
University of Chicago, Rush Medical College.
University of Minnesota Graduate School of Medicine (Fellowships).
Washington University School of Medicine.

MEDICAL HYDROLOGY
University of London, England.

MEDICINE
Barnes Hospital, St. Louis (Residencies)
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
Johns Hopkins Hospital (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Minneapolis General Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York (Residencies).
New Haven Hospital (Residencies.)
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston (Residencies).
St. Elizabeth's Hospital, Chicago (Clinical Medicine).
Stanford University School of Medicine (Graduate Courses and Residencies).
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

MEDICO-MILITARY SCIENCE AND TACTICS
University of California Graduate Division, Berkeley.

METABOLIC DISEASES

Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Short course).
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine.
Yale University School of Medicine.

NEPHRITIS

Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
Yale University School of Medicine.

NEUROLOGY AND PSYCHIATRY

Bloomingdale Hospital for Mental Diseases, White Plains, N. Y.
Boston Psychopathic Hospital (Residencies).
Colorado Psychopathic Hospital (Residences).
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Johns Hopkins Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York.
National Hospital for the Paralysed and Epileptic, W. C. 1, London.
Neurological Institute, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Pennsylvania Hospital, Philadelphia (Residencies).
Stanford University School of Medicine.
State Hospital for Mental Diseases, Howard, R. I.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

OBSTETRICS

Barnes Hospital, St. Louis (Residencies).
Cook County Hospital, Chicago (Residencies).
Elizabeth Steel Magee Hospital, Pittsburgh (Residencies).
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
Manhattan Maternity and Dispensary, New York City (Residencies).
Minneapolis General Hospital (Residencies).
Misericordia Hospital, Milwaukee (Residencies).
New Haven Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Fellowships, Review and Short Courses).
University Hospital, Minneapolis (Residencies).
University of California Graduate Division (Residencies).
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

OPHTHALMOLOGY

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Herman Knapp Memorial Eye Hospital.
Illinois Eye and Ear Infirmary (Residencies).
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Eye and Ear Infirmary (Short Courses and Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division, Berkeley.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Wills Hospital, Philadelphia (Residencies).

ORTHOPEDIC SURGERY

Harvard Medical School.
Hospital for Joint Diseases, New York City (Residencies).
Montefiore Hospital, New York City (Residencies).
New York Orthopedic Dispensary and Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Society for the Relief of the Ruptured and Crippled, New York City (Residencies).
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

OTOLARYNGOLOGY

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris).
Johns Hopkins Hospital, Baltimore (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine (Graduate Courses and Residencies).
Tulane University Graduate School of Medicine.
University of Berlin Medical Faculty.
University of Bordeaux, France.
University of Chicago, Rush Medical College.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

OTOLOGY

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Illinois Eye and Ear Infirmary (Residencies).
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Eye and Ear Infirmary (Short Courses and Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division, Berkeley.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

PARASITOLOGY AND TROPICAL MEDICINE

University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.

PATHOLOGY

Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
Louisville City Hospital, Kentucky (Residencies).
Mount Sinai Hospital, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Fellowships).
University of California Graduate Division, Berkeley (for advanced students).
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

PEDIATRICS

Children's Hospital, Los Angeles (Residencies).
Children's Hospital, Washington, D. C. (Residencies).
Children's Hospital of Michigan (Residencies).
Children's Hospital, Philadelphia (Residencies).
Children's Memorial Hospital, Chicago.
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harvard Medical School.
Hospital for Sick Children, London, England.
James Whitcomb Riley Hospital for Children, Indianapolis (Residencies).
Johns Hopkins Hospital, Baltimore (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Milwaukee Children's Hospital (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
St. Louis Children's Hospital (Residencies).
Tulane University Graduate School of Medicine (Fellowships).
University Hospital, Minneapolis (Residencies).
University of California Graduate Division (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Yale University School of Medicine (Research).

PHARMACOLOGY

Cornell University Medical College.
Harvard Medical School.
Stanford University School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

PHYSIOLOGY
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
Tulane University Graduate School of Medicine.
University of California Graduate Division.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

PHYSICAL THERAPY
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Hospital for Joint Diseases, New York City (Residencies).
New Haven School of Physiotherapy.
Stanford University School of Medicine.

PREVENTIVE MEDICINE (See Public Health)

PROCTOLOGY
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
Tulane University Graduate School of Medicine.

PUBLIC HEALTH, HYGIENE AND PREVENTIVE MEDICINE
Albany Medical College.
Columbia University College of Physicians and Surgeons.
Detroit College of Medicine and Surgery.
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Medical School, Baltimore.
Massachusetts Institute of Technology.
Ohio State University College of Medicine.
State University of Iowa College of Medicine.
University of California Graduate Division, Berkeley.
University of Georgia Medical Department.
University of Michigan Medical School.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
University of Wisconsin Medical School, Madison.
Yale University School of Medicine, New Haven.

RADIOLOGY
Harvard Medical School.
Howard University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Skin and Cancer Hospital.
Peter Bent Brigham Hospital, Boston.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

REFRACTION
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Herman Knapp Memorial Eye Hospital.
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary.
New York Eye and Ear Infirmary.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

RESEARCH MEDICINE
University of California Graduate Division (for advanced students).

RHINOLOGY—(See Otolaryngology)

ROENTGENOLOGY—(See Radiology)

SURGERY (Surgical Anatomy, Surgical Diagnosis, Operative Surgery)
Barnes Hospital, St. Louis (Residencies).
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris, France).
Jefferson Clinic and Diagnostic Hospital (Residencies).
Johns Hopkins Hospital (Residencies).
Lakeside Hospital, Cleveland, Ohio (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Minneapolis General Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York City (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston (Residencies).
Southern Pacific Hospital, Houston, Texas (Residencies).
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University and Bellevue Hospital Medical College.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division (Residencies).
University of Cincinnati College of Medicine (Fellowships).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

SURGERY (Traumatic and Emergency)
New York Post-Graduate Medical School.

SYPHILOLOGY
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
New York Skin and Cancer Hospital.
Stanford University School of Medicine.
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

TROPICAL MEDICINE
Columbia University College of Physicians and Surgeons.
London School of Hygiene and Tropical Medicine.
Presbyterian Hospital, San Juan, Porto Rico.
Tulane University Graduate School of Medicine.
University of Porto Rico, San Juan.

TUBERCULOSIS
Colorado School of Tuberculosis.
Fitzsimons General Hospital, Denver (Residencies).
Montefiore Hospital, New York City (Residencies).
National Jewish Hospital, Denver (Residencies).
The Trudeau School of Tuberculosis, Saranac Lake, N. Y.
Tulane University Graduate School of Medicine (Short Course).
University of California Graduate Division (Residencies).
University of Pennsylvania Graduate School of Medicine.

UROLOGY
Chicago Policlinic.
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

VENEREOLOGY
Chicago Policlinic.

Future Additions to the Approved List

Other institutions which are offering higher degree opportunities in medical subjects, other hospitals with special residencies, and other graduate medical schools will be added to the list on application and after, on investigation, their educational standards and provisions for postgraduate education are found to comply with the principles governing graduate medical education.

Special hospitals, or general hospitals which also provide residencies or advanced internships in special departments, are invited to make application to be included in the list of hospitals providing approved residencies in certain specialties. This approval is extended to only those hospitals that require the completion of a general internship for admission to the residencies.

HOSPITAL INTERN YEAR

Required by Medical Colleges

Twelve medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School.....	1910-11	1915
Stanford University School of Medicine.....	1914-15	1919
Rush Medical College (University of Chicago).	1914-15	1919
University of California Medical School.....	1914-15	1919
Marquette University School of Medicine.....	1915-16	1920
Northwestern University Medical School.....	1915-16	1920
University of Illinois College of Medicine.....	1917-18	1922
Loyola University School of Medicine.....	1917-18	1922
Detroit College of Medicine and Surgery.....	1919-20	1924
University of Nebraska College of Medicine...	1922-23	1926
University of Cincinnati College of Medicine..	1922-23	1926
College of Medical Evangelists.....	1922-23	1927

Required by Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in twelve states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1912-14	1918
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923
Delaware	1919-20	1924
South Dakota	1920-21	1925
Utah	1921-22	1926

The requirements both by medical schools and by state boards are overwhelmingly if not unanimously for the rotation service in general hospitals.

Scholarships and Loan Fund

As evidence that provision is being made for worthy students, regardless of their financial status, 576 scholarships are reported this year in the following forty-six medical schools:

University of Alabama School of Medicine, Tuscaloosa	67
Stanford University Medical School,* San Francisco	2
University of California Medical School,* San Francisco	6
University of Colorado School of Medicine,* Denver	1
Yale University School of Medicine,* New Haven	2
Georgetown University School of Medicine, Washington	2
Emory University Medical School,* Atlanta	11
Northwestern University School of Medicine,* Chicago	1
Rush Medical College, Chicago	7
University of Illinois College of Medicine, Chicago	84
Indiana University School of Medicine,* Bloomington and Indianapolis	12
State University of Iowa College of Medicine, Iowa City	1
University of Kansas School of Medicine,* Kansas City	1
Johns Hopkins University School of Medicine, Baltimore	6
University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	8
Boston University School of Medicine,* Boston	16
Medical School of Harvard University,* Boston	50
Detroit College of Medicine and Surgery, Detroit	8
University of Missouri School of Medicine,* Columbia	10
Washington University School of Medicine, St. Louis	2
University of Nebraska College of Medicine,* Omaha	6
Dartmouth Medical School,* Hanover, N. H.	2
Albany Medical College, Albany, N. Y.	11
University of Buffalo Department of Medicine,* Buffalo	1
Columbia University College of Physicians and Surgeons,* New York	36
Cornell University Medical College,* New York	3
Syracuse University College of Medicine, Syracuse	1
University and Bellevue Hospital Medical College,* New York	1
University of North Carolina School of Medicine, Chapel Hill	1
University of Cincinnati College of Medicine,* Cincinnati	12
University of Oregon Department of Medicine,* Portland	5
Hahnemann Medical College and Hospital of Philadelphia*	12
Jefferson Medical College, Philadelphia	3
Temple University Department of Medicine, Philadelphia	3
University of Pennsylvania School of Medicine,* Philadelphia	12
University of Pittsburgh School of Medicine, Pittsburgh	3
Woman's Medical College of Pennsylvania,* Philadelphia	30
Medical College of the State of South Carolina, Charleston	8
University of Tennessee College of Medicine, Memphis	15
Vanderbilt University Medical Department, Nashville, Tenn.	4
University of Texas Department of Medicine,* Galveston	2
University of Vermont Medical School*	55
Medical College of Virginia, Richmond	10
University of Virginia Department of Medicine,* Charlottesville	3
West Virginia University School of Medicine,* Morgantown	1
University of Wisconsin Medical School, Madison	6
Total in 46 medical schools	543

* Have loan funds also.

Loan Funds

Besides the twenty-six colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans.
University of Michigan Medical School, Ann Arbor.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota School of Medicine, University.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14	–18½ %
2. Physiology	4½ – 6	%
3. Biochemistry	3½ – 4½	%
4. Pathology, bacteriology and immunology	10 – 13	%
5. Pharmacology	4 – 5	%
6. Hygiene and sanitation	3 – 4	%
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20	–26½ %
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13	–17½ %
9. Obstetrics and gynecology	4 – 5	%
	76 – 100	%
Electives	24 – 0	%

MEMBERS OF ASSOCIATION

University of Alabama School of Medicine.
College of Medical Evangelists.
Stanford University School of Medicine.
University of California Medical School.
McGill University Faculty of Medicine.
University of Toronto Faculty of Medicine.
University of Colorado School of Medicine.
Yale University School of Medicine.
Georgetown University School of Medicine.
George Washington University Medical School.
Howard University School of Medicine.
Army Medical School.
Navy Medical School.
Emory University School of Medicine.
University of Georgia Medical Department.
Loyola University School of Medicine.
Northwestern University Medical School.
Rush Medical College.
University of Illinois College of Medicine.
Indiana University School of Medicine.
State University of Iowa College of Medicine.
University of Kansas School of Medicine.
University of Louisville School of Medicine.
Tulane University of Louisiana School of Medicine.
Johns Hopkins University School of Medicine.
University of Maryland School of Medicine and College of Physicians and Surgeons.
Boston University School of Medicine.
Harvard University Medical School.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi School of Medicine.
St. Louis University School of Medicine.
University of Missouri School of Medicine.
Washington University School of Medicine.
Creighton University School of Medicine.
University of Nebraska College of Medicine.
Albany Medical College.
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Long Island College Hospital.
New York Post-Graduate Medical School and Hospital.
Syracuse University College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo Medical Department.
University of North Carolina School of Medicine.
Wake Forest College School of Medicine.
University of North Dakota School of Medicine.
Ohio State University College of Medicine.
University of Cincinnati College of Medicine.
Western Reserve University School of Medicine.
University of Oklahoma School of Medicine.
University of Oregon Medical School.
Hahnemann Medical College and Hospital.
Jefferson Medical College.
University of Pennsylvania School of Medicine.
University of Pittsburgh School of Medicine.
Woman's Medical College of Pennsylvania.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
University of South Dakota College of Medicine.
Meharry Medical College.
University of Tennessee College of Medicine.
Vanderbilt University School of Medicine.
Baylor University College of Medicine.
University of Texas School of Medicine.
University of Vermont College of Medicine.
Medical College of Virginia.
University of Virginia Department of Medicine.
West Virginia University School of Medicine.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 21, 1926

MEDICAL EDUCATION IN THE UNITED STATES

For the twenty-sixth consecutive year, statistics dealing with medical education in the United States are here made available. The number of students enrolled during the last college session still shows an increase over that of the previous year, an increase which has been persistent since 1918. The number reported is 18,840, the largest enrolment since 1911. The number of students seeking admission to medical schools is still excessive, although, as we go to press, 236 [1] vacancies still exist in the acceptable medical schools. The Council on Medical Education and Hospitals has issued three separate bulletins calling the attention of all deans to these remaining vacancies, suggesting that well qualified students be referred to them.

The number of graduates this year was 3,962, a decrease of twelve since 1925. The total would have been 4,037, but two medical schools withheld degrees for a year pending completion of hospital internships. Of all these graduates, 3,732, or 94.2 per cent, were graduated from class A medical schools.

New and exceptionally well equipped medical schools are being organized to take the places of low grade institutions or diploma mills which are being closed. Last year the University of Rochester, N. Y., opened its new medical school, and the University of Wisconsin extended its medical course from two to four years. Plans are being considered for the medical department of the Duke University at Durham, N. C. With the closing of a diploma mill at Kansas City, the number of medical schools is again reduced to seventy-nine, the lowest number in this country since 1871. The seventy-nine medical colleges last year enrolled on the average 238 students each, as compared with 162 for each of the 122 colleges existing in 1911. Of the medical schools existing fifteen years ago, many enrolled less than fifty students in all four classes. This year, however, omitting the class C institutions, there was only one four year college which reported less than 100 students.

1. These vacancies are: first year, 38; second year, 73; third year, 66; fourth year, 59.

Fifteen years ago there were forty-three medical schools in which an inspector within a few minutes could note all the physical equipment which the college possessed. Only a small number of the others possessed abundant equipment. Fully a third of the medical schools now have groups of buildings more elaborate than were possessed by many liberal arts colleges and universities fifteen years ago.

BETTER USE OF CLINICAL FACILITIES

One of the chief advances in medical schools since the World War has been a great increase of hospital and dispensary facilities, and a more efficient use made of that material. Bedside instruction has been generally provided for students in small groups wherein each student is required to write histories, make physical examinations and, later, serve as a clinical clerk in the hospital. Such instruction has been made even more efficient through the careful supervision of the student's work by his instructors, and the correction of the students' errors, in the students' presence—a very effective part of their instruction.

PRESENT CHANGES NEEDED MOSTLY INTERNAL

The problems with which medical schools are now struggling are mainly internal. There is the ever present problem of the medical curriculum, which still needs revision so that only essential subjects may be retained and subjects that deal with the narrower fields of specialties may be listed for graduate students. With the rapid developments in medical schools during the last twenty years, the demand for teachers, particularly for those who would devote their entire time to such work, was greater than the supply. The need at present is not for greater numbers but for those who are better qualified.

GRADUATE MEDICAL SCHOOLS

The most positive need at this time is for more graduate medical schools, particularly those connected with well established universities, such as those in Minnesota and Pennsylvania. In universities having both undergraduate and graduate medical schools, the problem of the complex medical curriculum will be easier of solution, since a definite place is provided, either in the undergraduate or the graduate medical school, for every subject deemed essential in medical education. The demand for courses in the specialties covering three or more years is greater than the supply. This is especially true where fellowships including stipends have been established, such as those at the University of Minnesota. Graduate schools, when established, should be under the direct supervision of the graduate school of the university.

HIGHER DEGREES IN MEDICINE

With the development of graduate medical schools, provision should be made also for higher degrees in medicine for those who have completed satisfactory work either in general practice or in some specialty,

particularly when the work included some productive research. The efficiency of work leading to such degrees, also, should be measured by the same rigid methods as are applied in the granting of degrees of Master of Science and Doctor of Philosophy. These degrees also are more appropriate for higher courses in medicine than are special degrees, as a greater multiplicity of degrees will lead to more confusion. The courses leading to higher degrees might well include residencies in the specialties established in well conducted hospitals, and especially in the teaching hospitals of the medical schools.

FUTURE POSSIBILITIES FOR MEDICAL SCHOOLS

Medical schools and teaching hospitals in the future may render a still greater service to humanity, not only by providing a better education for physicians in the field, but also by educating the public regarding diseases, disease prevention and hygiene. The medical departments of our state universities particularly, standing as they do at the head of the educational systems of their states, have special opportunities for greater influence and helpfulness in their states, on condition that they are kept free from political manipulations or interference. The standards of medical education held by state universities should be adopted by licensing boards as the standard qualification for all those authorized to practice the healing art. The state universities also should be given the duty of deciding the worthiness of new educational institutions for which charters are sought—a provision which, if adopted by all states, would soon end the stream of diploma mills, which are casting so much discredit on education in the United States.

In view of the great developments in medicine during the last twenty-five years, paralleling as they do the amazing advances in other lines of human activity, it is hard to predict with any degree of certainty the changes that will occur during the next quarter century.

PRECEPTORSHIPS FOR MEDICAL STUDENTS

Much discussion is being given nowadays to the benefits of preceptorships for students with practicing physicians. Until about thirty-five years ago, students entering some of the medical schools were required to have served at least one year under a preceptor. With the adoption by medical schools of four annual courses of instruction, the requirement of a preceptorship was discontinued. In his preceptorship, the student went with the physician to the homes of patients, watched him make examinations, and assisted in the treatment, preparing splints or other crude apparatus used in the correction of injuries, or concocting medicines for the patients' use. The student also listened to the physician's conversations with the patients and noted the effect on the patient's mental attitude.

When the fourth year of instruction was added, it seemed doubtful whether, in most medical schools, an equivalent of this practical experience was actually provided. Few medical schools then had access to hospitals where patients could be shown either to individual students or to small sections. The students seldom or never entered the hospitals, but in a large amphitheater saw the teacher make examinations and diagnoses and give treatment to patients before the entire class.

In recent years, however, the methods of clinical instruction have been so modified as to provide a fairer equivalent of the practical experience obtained under the better preceptors. In medical schools, during the junior and early part of the senior years, students in small sections are assigned to individual patients, for whom they write histories, make physical examinations and recommend treatment. Then, at an appointed hour, all students of the group accompany an experienced staff member of the hospital, who reviews and corrects each student's history, physical examination and recommendations regarding treatment. Thus the students not only have the opportunity to examine patients personally, but also to have errors of omission or commission corrected by a competent teacher. This supervision brings the clinical work more into agreement with the experience which in former years was provided in the preceptorships.

The present method of clinical instruction has made two other advances: During the senior year the group study plan is followed by clinical clerkships in which each student has one or more patients assigned to him who are looked on as his individual patients as long as he is in that service or the patient remains in the hospital. These clerkships are of greater benefit both to the student and to the patient if the work is carefully checked or supervised by the clinical teacher. Then follows an internship in a hospital, which is now being developed as an additional year of actual clinical instruction and in which the student, still under supervision, is required to assume a larger responsibility in the care of sick or injured persons. Even with this better organized and supervised clinical instruction, however valuable it may be, a part of the experience obtained in preceptorships may still be lacking unless, during his hospital service, the staff physician takes the intern with him in his rounds of visits to his patients in the hospital. In this way, as under the preceptorships, the student can note the physician's inquiries addressed to his patients and note whether or not the patients are improving.

The value of the preceptorship was limited because of the comparatively few patients seen, coupled with the variable teaching ability of the preceptors. In marked contrast is the valuable experience the present-day medical students obtain through their group clinics, clinical clerkships and internships. Such experience in the preceptorships as may still remain is more than met by the great benefits which students can obtain through assignments to service in physicians' offices during summer vacations in accordance with plans proposed by

the Medical School of the University of California. Many recent graduates already are obtaining such experience through assistantships in physicians' offices in addition to their hospital internships.

In former days, probably the preceptorships gave the student his only opportunity for clinical experience because few medical schools had access to patients in either hospitals or dispensaries. Preceptorships will be of injury rather than service, however, if they are permitted to interfere with present-day clinical instruction.

THE MODERN HOSPITAL

Hospitals are by no means what might be designated as modern institutions in their organization. In evidence of this fact we may recall that the oldest existing hospital in London, St. Bartholomew's, has already celebrated its eight hundredth anniversary. It has been pointed out, however, that most of the earlier establishments were to all intents and purposes almshouses for the sick; so that the hospitals of the present day have experienced revolutionary changes of organization, equipment and purpose in contrast with their predecessors of former centuries. They have become more closely linked with medicine, along with the gradual development of this discipline. They have become more obviously devoted to the relief of the effects of disease and less ostensibly mere havens for the reception of the indigent distressed. As a consequence, both personnel and clientele have changed with the times.

In an elucidating address recently delivered at the New Haven Hospital on the occasion of the celebration at the centennial of the incorporation of the General Hospital Society of Connecticut, Cole[1] of the Hospital of the Rockefeller Institute stressed an aspect of hospital function that has not yet attained the widespread recognition it deserves. We refer to its part, for example, in the promulgation of the new knowledge concerning disease and its cure. As Cole has succinctly expressed the change, the hospital has emerged from the state of provincialism and has become truly cosmopolitan. It no longer ministers only to a small portion of the inhabitants of a relatively small city, it no longer dispenses its beneficence only to those who enter its portals as patients, but it brings aid to the sick and suffering and protects the well in distant lands. Its influence reaches wherever scientific medicine is practiced. This widening of influence, Cole adds, is due in great measure to the inclusion of education and research into the formula of its function.

So far as the education of the student of medicine is concerned, the hospital has to a large extent taken the place of the preceptor of a generation or two ago. Whether it is completely replacing the best of the older preceptorial system remains to be seen. Is the new order cultivating men as well as scientists? Cole has reminded us that if many practicing physicians are now deprived of the opportunity to teach, they still retain the possibility of preceptorial influence over the interns of our modern hospitals far beyond the routine of ward rounds. The responsible physician may, to quote Cole, be counselor, guide and friend, and through proper direction he may aid in making of the intern a student of disease, a scientific physician, a well trained practitioner and a true gentleman.

It is sometimes contended that research is an obligation of universities or special institutes—not in the province of the hospitals. The basic sciences and the fundamentals of investigative technic are doubtless as a rule most properly and advantageously pursued within academic walls; but the human patients will always present the problems with which medicine is primarily concerned. They are present in hospitals, large and small, urban and rural. The clinic rather than the laboratory affords the opportunity to become familiar with "the multitudinous manifestations of disease." The physician coming into daily contact with the sick has a constant appeal made to him, as Cole reminds us, to search for facts that may result in methods of relief. Until recent years, he continues, while the hospitals were appreciative of the contributions that their physicians made to medical progress, the hospitals themselves played little part in these advances; but now they stand beside the universities and the scientific institutes in educating physicians and in advancing medical science.

1. Cole, R. I.: The Modern Hospital and Medical Progress, Science 64:123 (Aug. 6) 1926.

MEDICAL DEFENSE IN IOWA

The belief that malpractice suits have become more frequent recently is not borne out by the report submitted by the Committee on Medical Defense at the recent meeting of the Iowa State Medical Society.[1] Prior to April 1, 1909, fifteen suits had been filed. In the seventeen years since that date, 151 suits have been filed. The distribution of such suits by twelve-month periods ending March 31 of each year, and the number of such suits per thousand members, is shown in the accompanying table.

The figures do not cover suits handled without the cooperation of the Committee on Medical Defense, or any demands made on account of alleged malpractice and settled without suit. They may be fairly accepted, however, as an index to the general trend of malpractice claims and litigation in Iowa. It will be interesting to learn just how this record compares with the records of other states.

Fractures and dislocations were the basis of 113 of the 266 suits covered by the committee's report. The results are not stated, and the report does not show the extent to which failure to use roent-

1. J. Iowa M. Soc. 16:329-334 (July) 1926.

gen rays was a factor in deciding the outcome. A physician's failure to avail himself of roentgen rays in the diagnosis and treatment of what is possibly a fracture or a dislocation is not conclusive evidence of neglect, but a physician armed with a roentgenogram can defend himself better than one who must rely on less certain evidence. If a patient refuses to cooperate in the use of roentgen rays for diagnosis and in the course of treatment, it is wise to get a written statement of that refusal, or other uncontrovertible evidence of it. Such evidence does not relieve the physician of liability; it helps him to prove, however, that there is no liability.

Among the 153 cases not based on fractures and dislocations, the reasons underlying the suits were: roentgen-ray therapy, thirteen; childbirth, ten; tonsillectomy, nine; sponge cases, eight; abortion, seven; appendectomy, seven. Two suits arose from deaths under anesthetics.

The damages demanded amounted to $3,035,597.99, an average of $11,412.02. Fortunately for the defendant physicians in the eleven suits in which verdicts were returned against them, the courts did not

Distribution of Suits

Year	Membership	No. of Suits Filed	No. of Suits per 1,000 Members
Prior to April 1, 1909....	....	15	...
1909–1910.....	2,081	13	6.2
1910–1911.....	1,961	10	5.1
1911–1912.....	1,978	14	7.1
1912–1913.....	1,653	13	7.7
1913–1914.....	2,019	10	4.9
1914–1915.....	2,061	24	11.6
1915–1916.....	2,186	19	8.7
1916–1917.....	2,277	17	7.4
1917–1918.....	2,333	13	5.5
1918–1919.....	2,259	14	6.2
1919–1920.....	2,342	7	2.9
1920–1921.....	2,277	12	5.2
1921–1922.....	2,448	13	5.3
1922–1923.....	2,384	16	6.7
1923–1924.....	2,459	14	5.6
1924–1925.....	2,374	20	8.4
1925–1926.....	2,362	15	6.3

appraise damages on a scale quite so expansive, for the damages awarded average only $1,443.27 per case. The cost of the medical defense service to the Iowa State Medical Society during the nineteen years since the service was organized has been $60,351.26. For that amount, 128 claims have been disposed of without suits and 230 suits have been defended. The report does not differentiate between expenses incurred in adjusting claims without suit and in defending suits. Computing the cost of the service as a whole on the basis of suits defended, the average cost was $262.39. This gives an impression of money expended solely for the benefit of a few members of the society who were unfortunate enough to be made the victims of suits. Actually, however, the money spent protected every member of the society against suits. The fact that there was an active committee of responsible, disinterested physicians, prepared to pass justly on claims against their fellow members, to assist them and aggrieved patients in effecting equitable adjustments when physicians have been at fault, and to fight for physicians to the last ditch when they have been unjustly assailed, has certainly tended to deter the ventures of patients and unscrupulous lawyers who otherwise might have resorted to the threat of malpractice suits on inadequate evidence in the hope of collecting easy money. The money spent by the members of the Iowa State Medical Society for this service, $2.31 per capita in 1925, is money well spent. The report of the Committee on Medical Defense indicates the care and thoroughness with which the medical profession of Iowa is dealing with this major problem in medical economics, and reflects credit on those into whose hands the details of the work have been given over.

Current Comment

SERIES OF CHARTERED DIPLOMA MILLS

There are well known instances of series of diploma mills being conducted by the same individual or group. Between 1888 and 1892 a series of six diploma mills was chartered in Illinois by one Johann Malok, all of which contained the word "German" in their titles. These appear to have been forced out of business through the withdrawal of recognition by the Illinois State Board of Health and the prompt report of such action to other state boards. A second series of four diploma mills was chartered, also in Illinois, between 1889 and 1900 by a group headed by one "J. Armstrong, M.D." As the charter of each institution was revoked, the group continued their barter in diplomas under a new title. The series was brought to a prompt termination when Armstrong was convicted and sentenced to a long term of imprisonment. The charter of the infamous Oriental University, which had its headquarters at Washington, D. C., was revoked in December, 1923. Immediately thereafter the "business" was transferred to a newly chartered "Cosmopolitan University," located at Poplars, Md. This beginning of another series of diploma mills also was checked in January, 1926, when the president of the mill, "Bishop H. P. Holler," was fined $1,000 and sentenced to two years in prison. Three years ago, two medical schools in Missouri were exposed as being engaged in the sale of medical degrees. The charter of one of these, the Kansas City College of Medicine and Surgery, was revoked, June 23, 1926. Information just received states that an "American Medical University" was chartered in Missouri, July 29, 1926, and was opened for business, Aug. 9, 1926. It professes to teach the eclectic system of medicine and gives the same address as that of the Kansas City College of Medicine and Surgery. Of the four persons named as its incorporators, two hold diplomas from the Kansas City College of Medicine and Surgery. It appears, therefore, that another chain of diploma mills has been started in Kansas City, the common characteristic of which will be the teaching of eclectic medicine. The reason for this is that easy access to medical licensure is available through the Arkansas Board of Eclectic

Medical Examiners. It is expected that the charter of the other Missouri diploma mill, the St. Louis College of Physicians and Surgeons, will also be revoked, and a report says that this school also intends to reopen under a new charter, probably also as an "eclectic" institution. The progress of the one and possibly two new medical schools in Missouri, therefore, will be watched with much interest. To check the sale of fraudulent diplomas requires more drastic action than merely the revoking of a charter. This particular case, also, shows how much easier it has been to secure a new charter than it was to have the former one revoked. Is this not a good occasion for Missouri to establish regulations governing the issuing of charters of educational institutions? Certainly Missouri does not desire to remain the headquarters of the traffic in fraudulent medical diplomas.

TUITION FEES AND ACTUAL COST OF MEDICAL EDUCATION

As will be noted in the educational statistics published this week, tuition fees have been increasing rather rapidly. In 1910 the average fee per student annually was $118. Fifteen years later, in 1925, this average fee had just doubled, amounting to $236. At present, one year later, the average fee per student has increased to $274. Three of the schools in New York have increased their fees to approximately $525, and a medical school in Philadelphia and one in Baltimore are charging over $400. In 1910, however, some medical schools were still being maintained entirely from students' fees, and a few continued to make profits from that source. While the average fee paid by the student in eighty-two medical colleges in 1916 was just $150, the average expenditure by the colleges per student was $419. Five years later, in 1921, the average fee was $185, but the average expenditure per student was $655. Even though the average tuition fee has been further advanced, it still constitutes only a small proportion of the actual expenditure for the student's medical instruction. If the student is financially able to do so, he should pay a reasonable amount toward the cost of his instruction. For other high grade students who are lacking in the essential finances, scholarships and loan funds have been established in nearly all the high grade medical schools, provisions that were not so important twenty years ago. With the greater severity of the medical curriculum and the unprecedented opportunities for clinical instruction under able teachers, the student of limited means cannot afford to neglect such instruction in an attempt to work his way through the medical school. A wider provision for liberal loan funds will permit any student of excellent scholarship and mentality to take the medical course, irrespective of his financial status.

Diagnosis Must Fit Patient.—I endeavor to approach my cases from the standpoint of the normal, and in any departure from this I endeavor to keep an open mind as to causation—hereditary, constitutional, acquired disease, environmental, hysteria, sexual or traumatic. A good physician makes the diagnosis fit the patient, and not the patient fit the diagnosis. —Davis, A. E.: *Lancet* **2**:118 (July 17) 1926.

Association News

THE WASHINGTON SESSION

Appointment of Committee on Fractures to Arrange for Exhibit and Symposium

At the Dallas Session, the Section on Surgery, General and Abdominal, and the Section on Orthopedic Surgery authorized the appointment of a committee to arrange for a cooperative exhibit on fractures for the Washington Session. This committee is to advise with the section secretaries concerning a symposium, which will correlate with the exhibit. The Section on Surgery, General and Abdominal, has appointed Dr. Kellogg Speed of Chicago, and the Section on Orthopedic Surgery has appointed Dr. Nathaniel Allison of Boston. They have obtained the consent of Dr. William Darrach of New York to act as the third member. Further announcement of the appointment of an Advisory Committee and the method of making application will be made in these columns in the fall.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

Legal Change of Name.—A superior court order, issued May 26, at New Haven, adjudged that the name of Jacob Shulansky (M.D.) be changed to Jacob Baker.

Epidemic of Septic Sore Throat.—There was an outbreak of about 200 cases of septic sore throat in Guilford, according to the New York *Times*, August 12, on which date the fourth death occurred. The state department of health has taken charge of the effort to stop the epidemic, and physicians from Yale University Medical School and other parts of the state had come to Guilford to assist. It appears from an investigation by Dr. Millard Knowlton of the state department of health that the disease was traced to milk sold by a dairy one of whose farm hands had septic sore throat. The dairy has been closed.

GEORGIA

Personal.—Dr. Guy G. Lunsford, Weston, has been appointed a trustee of the Medical Department of the University of Georgia by the governor.——Dr. J. F. Covington has been elected to the staff of the John D. Archbold Memorial Hospital, Thomasville.——Dr. Joseph D. Applewhite has assumed the duties of health officer at Macon, to which position he was elected some months ago.——Dr. Bernard W. Carey, director, Commonwealth Fund Child Health Demonstration, Athens, has been awarded the honorary degree of doctor of public health by the University of Georgia.——Dr. Robert E. McClure, Scottsboro, Ala., has been elected county health officer for Brooks County, and will take up his duties about September 1. Dr. McClure is now health officer of Jackson County, Ala.——Dr. T. W. Ayers, who has been medical missionary for many years in China, has accepted a position as secretary of the Baptist State Board of Georgia.

ILLINOIS

Pappeti Penponey Jailed.—Charged with practicing medicine without a license, Pappeti Penponey was bound over to the grand jury, August 5, and remanded to jail in default of $5,000 bonds, it is reported. Penponey is said to have claimed to be superintendent of the Elmwood Sanatorium, Elmwood Park, of which institution there is no record in this office.

Personal.—Dr. James L. Miller has resigned as city health physician of North Chicago.——Dr. James S. Archibald, Peoria, has been appointed head of the department of radiology at the Decatur and Macon County Hospital, effective, August 15, to succeed Dr. Clarence J. McCullough.——Dr. Mary McKibben Harper, Maywood, has accepted the office of editor and manager of the *Bulletin* of the Medical Women's National Association.

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago announced, August 16, it is reported, the revocation of the liquor licenses of the following:

Dr. John W. Nicolay, Pontiac, Ill.
Dr. Victor M. Daly, Pontiac, Ill.
Dr. William R. Goodrich, La Place, Ill.

The liquor licenses of the following druggists were also reported revoked:

Frank J. Czernecki, Cicero, Ill.
Lee J. Behl, Pontiac, Ill.

Lawyers Explain Naprapathy.—At the trial of "Dr." Jesse Roberts, a naprapath of Rockford, July 23, who was charged with practicing medicine without a license, the defense lawyers elucidated the term naprapathy. It was argued in the defense that naprapathy does not consist in the treatment of disease, although evidence had been introduced to show that "Dr." Roberts treated Charles Poluyanski, who was paralyzed; naprapathy, it was said by one lawyer, is merely the stretching of muscles by manipulation to relieve tension on the blood vessels; another lawyer declared that naprapathy was like the game of golf, in that it furnished the muscles with artificial exercise; the third lawyer for the defense argued to the effect that the title "Dr." used by the accused was not especially significant, for it might also be applied to a lawyer who improved his client's "physical tone" by relieving him of the worry of some legal difficulty.

Chicago

Automobile Accident Not Fatal.—A report in the newspapers and from other sources of the death of Dr. William R. Campbell who was in an automobile accident, July 11, fortunately proved to be erroneous. Dr. Campbell sustained a skull fracture and other injuries, but has left the hospital and is apparently on the road to recovery.

Society News.—Dr. Effa V. Davis has been elected president of the Chicago Council of Medical Women; Drs. Alice I. Conklin and Sarah M. Hobson, vice presidents; Dr. Agnes Beulah Cushman, secretary, and Dr. Mary M. S. Johnstone, treasurer. The council will award a $25 prize to the author of the best original paper read before it in the next year. Inquiries should be addressed to Dr. Cushman, 25 East Washington Street.

Liquor Licenses Revoked.—The local prohibition administrator, Mr. E. C. Yellowley, announced, August 16, it is reported, the revocation of the liquor licenses of the following:

Dr. Melbourne Clements
Dr. John A. Cousins
Dr. Morris Gindich
Dr. Franklin E. Hall
Dr. Orton C. Hyslop
Dr. Henry F. Lewis
Dr. John W. Lewis
Dr. George S. Livingston
Dr. Effie L. Lobdell
Dr. Leah C. Lurie
Dr. Harvey C. Johnson
Dr. Cleveland C. MacLane
Dr. Kate E. MacRae
Dr. John Pishotta
Dr. Clarence W. Rainey
Dr. Ferdinand Seidler
Dr. James Shaynin
Dr. Cornelius M. Vetten
Dr. W. Voigt

The liquor licenses of the following druggists and drug stores were also reported revoked:

Carl G. Anderson, 4639 North Robey Street.
Hersberg & Lesten, 1000 North Clark Street.
Charles J. Franzman, 1125 West Sixty-Third Street.
Rose Drug Company, 6359 Cottage Grove Avenue.
Klocker Pharmacy, 301 South Halsted Street.

Faculty Appointments at University of Chicago.—The board of trustees of the University of Chicago announced the following appointments to the faculty, August 17:

Dr. Edward V. L. Brown, clinical professor, department of ophthalmology, Rush Medical College.
Dr. Clarence J. McMullen, assistant clinical professor, department of medicine, Rush Medical College.
Dr. William J. Quigley, assistant clinical professor, department of medicine, Rush Medical College.
Merrill H. Killip, D.D.S., clinical instructor, department of surgery, Rush Medical College.
Dr. Howard C. Miller, clinical instructor, department of surgery, Rush Medical College.
Dr. Victor E. Gonda, clinical associate, department of medicine, Rush Medical College.
Dr. Edmund Jacobson, research associate, department of physiology.
Dr. Ernst Pribram, assistant professor, department of pathology, Rush Medical College.
Dr. Chester S. Keefer, instructor, department of medicine, and resident physician, Billings Hospital.
A. Baird Hastings, professor, department of physiologic chemistry.
Thurston S. Johnson, research associate, department of hygiene and bacteriology.
Elizabeth M. Koch, research associate, department of physiologic chemistry.

INDIANA

University News.—The trustees of Indiana University have voted to enlarge the equipment of the school of medicine so that an additional twenty students can be accommodated before the next fall term begins.

State Medical Meeting.—The Indiana State Medical Association will meet this year at West Baden Springs Hotel, September 22-24. The state journal says that there will be the usual golf tournament preceding the meeting; that there will be a general entertainment the evening of the first day which the hotel management will make unique; that the second and third days will be given over entirely to scientific work, and that Ex-Governor Morrow of Kentucky will give the principal address at the banquet Thursday evening. Speakers announced for the meeting include, among others, Dr. Ernst Lowenstein, Vienna, Austria; Dr. Olin West, secretary and general manager, American Medical Association; Dr. Maxwell A. Bahr, Indianapolis, "Malaria Therapy in General Paresis"; Dr. Ralph H. Major, Kansas City, "Arterial Hypertension"; Dr. Charles P. Emerson, Indianapolis, "Emotional Life and Its Importance in the Production of Pathologic Conditions"; Dr. Alexander Randall, Philadelphia, "The Prospect of the Prostatic," and a symposium on the relation of sinus infection to diseases of the eye by Drs. Bernard J. Larkin, John F. Barnhill, Albert M. Cole, Raymond C. Beeler and Smith, all of Indianapolis.

IOWA

Society News.—The Crawford County Medical Society held its annual meeting at Denison, August 6; Dr. Bennett A. Melgaard, Sioux City, read a paper on "Feeding of Children," and Dr. Clifford J. Barborka, Mayo Clinic, Rochester, Minn., spoke on "Diet in Disease."

Typhoid Outbreak.—Nine residents of the village of Albert City were reported, August 4, to have been stricken with typhoid, and among them was the only physician in the village. Physicians and nurses were sent to this community from nearby towns. Albert City had a severe outbreak of typhoid about three years ago.

Personal.—Florence M. Ross, S.B., of Simmons College, Boston, has been appointed head of the department of nutrition in the University of Iowa College of Medicine, Iowa City, to succeed Ruth Wheeler, Ph.D., who resigned to accept a position at Vassar College, Poughkeepsie, N. Y.—— Dr. Edward F. Strohbehn has been elected a member of the school board at Davenport to succeed Harry E. Downer, resigned.

LOUISIANA

Personal.—Dr. William D. Phillips, New Orleans, has been elected president of the New Orleans Gynecological and Obstetrical Society for the ensuing year.——Dr. Octave C. Cassegrain, New Orleans, has been appointed surgeon in chief of the French Hospital, which was recently reopened. ——Dr. Whyte G. Owen, White Castle, received the honorary degree of doctor of laws at Centenary College, June 9.

Appointments at Tulane University.—Tulane University, New Orleans, announced, August 5, the following appointments in the faculty of the school of medicine for 1926-1927:

Dr. Joseph A. Danna, professor of clinical surgery.
Dr. Christian G. Cole, assistant professor of clinical surgery.
Dr. Edwin A. Socola, instructor in pediatrics.
Dr. Monroe Wolf, instructor in urology.
Dr. Ramon A. Oriol, Jr., clinical assistant in dermatology.
Dr. Joseph M. Hountha, clinical assistant in surgery.
Dr. Daniel J. Murphy, clinical assistant in surgery.
Dr. Richard A. Hale, clinical assistant in surgery.
Dr. Claude V. Perrier, clinical assistant in surgery.

MASSACHUSETTS

License Revoked.—At a meeting, July 1, the board of registration in medicine voted to revoke the registration and cancel the certificate of Dr. Alfred F. Leger, 540 Massachusetts Avenue, Boston.

Medical Examining Boards of New England.—Dr. John M. Birnie, Springfield, Mass., was elected president of the Medical Examining Boards of New England at the annual meeting, Poland Spring, August 5; Dr. Adam P. Leighton, Jr., Portland, Me., vice president, and Dr. Franklin A. Ferguson, Portland, Me., secretary.

Dr. Watkins Goes to Pennsylvania.—Dr. Harvey M. Watkins of the Massachusetts state department of mental diseases has been appointed superintendent of the state training school for feebleminded at Polk, Pa., to succeed Dr. James Moorhead Murdock, who resigned after thirty years' service. Dr. Watkins became a member of the staff of the Monson State Hospital at Palmer in 1916; he served in France during the World War, then at the Monson State Hospital, the Danvers State Hospital and the Belchertown state school, and in 1924 was assigned to the state department of mental diseases.

Dr. Crossman to Superintend Mental Hospital.—Dr. Edgar O. Crossman has retired as medical director of the U. S. Veterans' Bureau, Washington, D. C., and has been appointed superintendent of the U. S. Veterans' Bureau Hospital for Mental and Nervous Diseases at West Roxbury; he will supervise, also from a medical standpoint, the construction of the Veterans' Bureau hospitals for mental and nervous diseases at Northport, L. I., and Bedford, Mass. Dr. Crossman is a former president of the New Hampshire State Medical Society, and chairman of the board of trustees of the New Hampshire State Hospital at Concord.

MICHIGAN

Four Year Course in Medical Biology.—The Michigan State College of Agriculture and Applied Science, East Lansing, will offer this fall a four year college course for the training of laboratory experts, bacteriologists, serologists, chemists and pathologists. The course is designed to give the student, also, a liberal education, and nonmedical studies may be elected to a considerable extent. The announcement states that Michigan State College is prepared to train students in the sciences that may assist the medical profession in their effort to cure and prevent disease; that there is being constructed now a chemical laboratory, comparing favorably with the laboratory of bacteriology previously completed. Cooperation has been established with the Michigan Board of Health laboratories. The new course has been approved by the Michigan State Medical Society.

MINNESOTA

Liquor License Revoked.—The district prohibition administrator, with headquarters at St. Paul, recently revoked the liquor license of Dr. Edwin W. Cooley, Blooming Prairie.

Hospital News.—Willmar Hospital, Willmar, is constructing a $100,000 addition.——Contracts totaling $1,300,000 were let, July 19, for the construction of a 200 bed hospital at St. Cloud by the Sisters of St. Benedict.——The Mayo Clinic, Rochester, is constructing a thirteen story addition which will cost $1,500,000.

MISSOURI

Society News.—Dr. Jabez N. Jackson, Kansas City, President-Elect of the American Medical Association, addressed the Bates County Medical Society at Butler, July 29, on "Physiology in Surgery"; Dr. Frank R. Teachenor, Kansas City, spoke on "Hydrocephalus," and Dr. Charles C. Conover, Kansas City, on "Hematogenous Infections of the Kidney."

Personal.—Dr. Luther M. Callaway, Kansas City, received the degree of master of medical science in otolaryngology from the University of Pennsylvania, June 16.——Dr. George Gellhorn, director and professor of the department of obstetrics and gynecology, St. Louis University School of Medicine, St. Louis, will deliver a series of lectures before the sixth annual summer school of the Vancouver Medical Association, Vancouver, B. C., September 13-16.

Dr. Brown Honored.—A banquet was given, July 29, at Hamilton, by members of the Caldwell County Medical Society in honor of Dr. Tinsley Brown, who has completed more than fifty years in the practice of medicine; among those present were Dr. Edward J. Goodwin, St. Louis, secretary, state medical society, and physicians from Kansas City. Dr. Brown, who was president of the Missouri State Medical Society, 1909-1910, was presented with a gold buckle and a white gold watch and chain and medal on the back of which are engraved the compliments of the Caldwell County Medical Society, which recently elected him an honorary life member. Dr. Brown has also been active in community affairs and, among other things, was postmaster for about eight years.

MONTANA

State Medical Election.—At the forty-eighth annual meeting of the Montana State Medical Society, Billings, July 16-17, Dr. Fred F. Attix, Lewistown, was elected president; Dr. George M. Jennings, Missoula, president-elect; Dr. Samuel K. Campbell, Harlowtown, vice president, and Dr. Elmer G. Balsam, Billings, secretary-treasurer. The next meeting will be at Missoula, and the 1928 meeting in Yellowstone National Park, in conjunction with the state medical societies of Idaho and Wyoming.

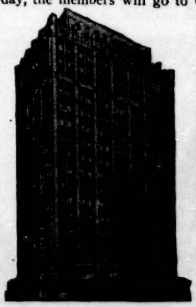
NEBRASKA

Personal.—Homer B. Latimer of the University of Nebraska has been appointed professor of anatomy at the University of Kansas School of Medicine.—— Dr. M. Martha McVean-Edmonds has been appointed a member of the board of health of Nebraska City.

Hospital News.—Dr. Michael G. Wohl, Omaha, was recently elected president of the staff of Paxton Memorial Hospital. ——Nebraska City and Otoe County have just completed a campaign to raise $150,000 for a hospital which is now under construction by the Sisters of St. Francis, and which, it is expected, will be completed by the first of the year.

Society News.—Dr. Guy F. Zarbaugh, Dalton, addressed the Cheyenne County Medical Society, Kimball, July 12, on "The General Practitioner's Laboratory."——Drs. Jay C. Byers and Frank T. Hamilton, both of Friend, entertained the Saline County Medical Society, recently.——The Nemaha and Richardson County Medical Societies held a joint meeting and picnic at City Park, Shubert, July 14; Dr. William L. Shearer, Omaha, gave an address on "Focal Infection," and Dr. Arthur C. Stokes, Omaha, on "Gastric and Duodenal Ulcer."

Medical Society of Missouri Valley.—The new eighteen story medical arts building at Omaha will be dedicated by the officers of the Medical Society of the Missouri Valley at the annual meeting of that society, September 15-17. All of the lectures and diagnostic clinics will be held in the auditorium of this building as well as the commercial exhibits. On Thursday, the members will go to Council Bluffs, where clinics will be held. Members of the faculty of the Universities of Missouri, Kansas, Iowa, Nebraska and Creighton University will give short laboratory demonstrations. Among those on the program are Dr. Jabez N. Jackson, Kansas City, President-Elect, American Medical Association; Dr. William Allen Pusey, Chicago, Past President of the American Medical Association; Dr. Hilding Berglund, University of Minnesota; Dr. Irving S. Cutter, Northwestern University Medical School; Dr. McKim Marriott, dean and professor of pediatrics, Washington University School of Medicine, St. Louis; Dr. Edward C. Rosenow, University of Minnesota; Dr. Gabriel Tucker, Philadelphia; Dr. Russell L. Haden, University of Kansas School of Medicine; Dr. E. H. Skinner, Kansas City, Mo., and Carl R. Moore, Ph.D., University of Chicago. The secretary of the society is Dr. Charles W. Fassett, 115 East Thirty-First Street, Kansas City, Mo., and the president, Dr. Arthur D. Dunn, Omaha.



NEW JERSEY

Outing for Crippled Children.—Four hundred crippled children from all parts of the state were given an outing at Asbury Park, August 2, by the local hotel men's association in conjunction with the New Jersey Elks' Lodge. The children were entertained on the beach and at luncheon at the hotels, and given an automobile trip in the country. Joseph G. Buch, Trenton, has been elected chairman of the New Jersey Crippled Children's Commission. The commission will compile statistics as to the number and condition of crippled children in the state.

NEW YORK

Hospital News.—Ground was broken at Saranac Lake, August 14, for the new Northwoods Home of the Adirondack Fund for the Tuberculous. Northwoods Sanatorium has been in existence two years, and larger quarters have been found necessary for beneficiaries of the fund.

Personal.—Dr. James J. Chandler has been provisionally appointed supervisor of tuberculosis dispensaries and clinics in the state department of health; Dr. Chandler has had several years' experience in tuberculosis sanatoriums, and lately has been doing postgraduate work at the Massachusetts General Hospital, Boston, and the New York Post-Graduate Hospital.

Society News.—Dr. Abraham H. Aaron, Buffalo, was elected president of the Lake Keuka Medical and Surgical

Association, July 27, and Dr. John A. Hatch, Penn Yan, was reelected secretary-treasurer. The meeting this year was attended by more than 250 persons. Among the speakers at this meeting were Drs. Thomas Klein, Philadelphia, and Edward S. Welles, Ray Brook.

District Societies Plan Fall Meetings.—The *New York State Journal of Medicine* considers the importance of district branch medical societies in organized medicine, and notes that the eight New York district societies have already held preliminary meetings to plan for their fall meetings. It has been decided to hold these meetings as follows:

First District branch, Briar Cliff, November 10.
Second District branch, Kings County Medical Building, Brooklyn, some time in November.
Third District branch, place not fixed; tentative date, September 24-25.
Fourth District branch, time and place not fixed.
Fifth District branch, Watertown, October 14.
Sixth District branch, Oswego, September 21.
Seventh District branch, time and place not fixed.
Eighth District branch, Buffalo, October 27-28.

New York City

Smallpox Outbreak.—Five cases of smallpox in negroes, none of whom had ever been vaccinated, were reported a few days ago in one section of Brooklyn. The health commissioner stated that there was no occasion for alarm over the situation.

Personal.—Louis I. Dublin, Ph.D., of the Metropolitan Life Insurance Company, Health Commissioner Harris, and the chief executive officer of the state transit commission are drafting a stagger system for subway traffic, and have thus far classified the industries of Manhattan into thirty-five subdivisions; these will be used as a basis for trade conferences on subway traffic relief.

Another Alleged Milk Grafter Sentenced to Penitentiary.—Former Assistant Corporation Counsel William H. Kehoe was sentenced, August 12, to an indeterminate term in the penitentiary, it is reported, for conspiring to graft in the importation of milk into the city from unapproved sources. The maximum sentence is three years. Kehoe is said to have conspired with Thomas J. Clougher, then secretary to Health Commissioner Monaghan, and with milk dealers. The judge, in sentencing Kehoe, said that he would not impose a $500 fine in addition to the term in prison, for he believed that the state did not want to take any of Kehoe's ill gotten money. Kehoe is known to have received $23,000 during two years in this kind of work, but that is said to represent a small portion of the proceeds which he presumedly shared with Clougher (THE JOURNAL, July 10, 1925, p. 106). The mayor has appointed Judge Kelby, former justice of the appellate division of the supreme court, as a special counsel to review the evidence collected in connection with the milk investigation in the health department, and to prepare cases for prosecution in the five counties of the city.

NORTH DAKOTA

Freshman Class Filled.—The quota for the freshman class at the University of North Dakota Medical School for next year has been filled; the twenty-eight successful applicants were selected from a total of seventy-five; twenty-two of them are from North Dakota; one is a woman. Dr. Harley E. French, dean of the medical school, who has been on leave of absence, will be in charge when the school opens this fall; John G. Sinclair, M.S., of the faculty, is on one year's leave of absence.

OHIO

Society News.—Dr. Edward S. Judd, professor of surgery, University of Minnesota Post-Graduate School, will address the Summit County Medical Society, Akron, September 7, on "A Consideration of Surgery of the Biliary Tract."

Leper Discovered in Akron.—The case of leprosy recently discovered in the city of Akron was the first of its kind in the history of the local health department. The patient was a man, aged about 25, a native of Greece, and a sailor until coming to Akron about four months ago.

Summer Camps for Crippled Children.—Several hundred crippled children in various parts of Ohio have been sent to summer camps for several weeks through the efforts of Rotary Clubs, especially those of Cincinnati, Akron and Canton, which have camps established exclusively for physically handicapped children. Such camps are not restricted, however, to children who live in the communities in which the clubs are located. The Ohio Crippled Children's Society states that groups interested in helping crippled children which have not heretofore been sending them to summer camps should consider the desirability of doing so next year.

PENNSYLVANIA

Society News.—Dr. Samuel Calvin Smith, Philadelphia, addressed the Cumberland County Medical Society, recently, on "The Irregular Heart, Its Clinical Varieties and Their Treatment."

Eight Chiropractors Arrested.—With information furnished by the state board of medical education and licensure, warrants were recently issued for the arrest of six chiropractors in Williamsport, one in Muncy and one in Jersey Shore, charging them with practicing without a license in violation of the state law. When arraigned in the justice's court, they were given until August 16 to prepare their defense.

Personal.—Dr. J. Swan Taylor has been reelected medical inspector of the city school of Johnston.——Dr. Solis C. B. Hertzog has been appointed superintendent of the Neversink Mountain Tuberculosis Sanatorium, Reading.——The late Dr. Oliver C. Heffner, Pottstown, provided in his will for a trust fund of $5,000, the income of which is to be used in interest of missionary work in China.——Dr. David W. Thomas, Lock Haven, was elected president of the West Branch Medical Society at the annual meeting, August 4.——Drs. John L. Groh and John E. Marshall have been appointed school physicians for the city of Lebanon.

Hospital News.—The Geisinger Memorial Hospital, Danville, has started the construction of a $250,000 addition, which will increase the capacity of the institution by thirty beds.——The Reading Hospital, which has been in the course of construction for about two years, will be formally opened, October 2. The hospital staff will give a banquet to all the physicians of the city of Reading and of Berks County. The new hospital, it is said, will represent an expenditure of about $4,000,000.—The General Hospital of Wilkes-Barre has contracted for the erection of an eight story addition which will cost about $345,000, and give the hospital a total capacity of 500 beds.

TENNESSEE

Typhoid Outbreak.—The outbreak of typhoid in Nashville noted in THE JOURNAL, August 14, had, on August 7, amounted to forty-seven cases with seven deaths, it is reported.

Society News.—The Tri-County Medical Society met at Hickman County Court House, Centerville, August 3, and, among others, was addressed by Dr. William K. Edwards, Dr. J. N. Smith, Waverly, and Dr. John M. Lee, Nashville. The next meeting will be in Dickson in September, 1927.

Eye, Ear, Nose and Throat Hospital.—The Memphis Eye, Ear, Nose and Throat Hospital was opened to patients, August 2; there are thirty-seven rooms for private patients, and a total of seventy-two beds and five operating rooms; twenty-five beds have been endowed as memorials; the dispensary will be opened daily for indigent patients. The *Memphis Medical Journal* says that the hospital is the finest of its kind in the South, and that the credit for its conception, promotion and erection is due Dr. Louis Levy; there is a staff of ten surgeons in the eye department, and fourteen in the ear, nose and throat department.

County Health Units.—There is now a total of thirteen full-time county health organizations in Tennessee, the most recent one being Lauderdale, established, July 1, with an appropriation by the county of $4,500 and a like amount by the state. Dr. Benjamin M. Primer is director of the Lauderdale department and is assisted by a sanitary officer, a public health nurse and a clerk. The Davidson County Health Department increased its budget by $2,500, and the county court has ratified the appropriation of $10,000 in addition for the treatment and prevention of tuberculosis. At the July term of court a three cent health tax was voted in Rutherford County.

WEST VIRGINIA

Hospital for Colored Insane.—A state hospital for colored insane and a state industrial school for boys was opened at Lakin, Mason County, June 13. Dr. Constantine C. Barnett is superintendent of the hospital. This institution and the U. S. Veterans' Hospital no. 91, at Tuskegee, Okla., are said to be the only institutions supported by the public whose superintendents are negroes.

Tri-State Meeting.—The Central Tri-State Medical Society will meet in Huntington, September 9; Dr. William Wayne Babcock, Philadelphia, will speak on "Problem and Practice in Biliary Surgery"; Dr. Pascal Brooke Bland, Philadelphia, on "The Management of Labor," and Dr. Samuel G. Gant,

New York City, on "Surgical Treatment of Colitis and Demonstrating the Method of Operating Anorectal Disease Under Local Anesthesia," with moving pictures.

WISCONSIN

Professor of Psychology Appointed.—Prof. Kurt Koffka of the University of Giessen, Hesse, Germany, has been appointed professor of psychology at the University of Wisconsin for the academic year 1926-1927, it is reported.

Society News.—About 200 members and their wives attended the first annual meeting of the Fifth Councilor District, Elkhart Lake, July 1-2; the first day was devoted largely to recreation, entertainment and a banquet at which Dr. Joseph F. Smith, president of the state medical society, and Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, gave addresses; July 2, Dr. Herman L. Kretschmer, Chicago, spoke on "Diseases of the Kidney"; Dr. Joseph L. Miller, Chicago, on "The Pulpless Tooth"; Dr. Erwin R. Schmidt, University of Wisconsin Medical School, on "Surgical Treatment of Chronic Adhesive Pericarditis."——Dr. William D. Stovall, director, state laboratory of hygiene, addressed the Third Councilor District Medical Society, recently, at Wisconsin General Hospital, Madison, on "Advances in the Diagnosis of Scarlet Fever," and gave demonstrations of the Dick and Schick reactions; Dr. Joseph Brennemann, Chicago, "Treatment of Pyloric Stenosis and Allied Conditions," and Dr. Raymond C. Blankinship, Madison, on "Cholecystography."——Dr. Arthur W. Rogers, Oconomowoc, was recently elected president of the Milwaukee Neuropsychiatric Society, and Dr. William T. Kradwell, Wauwatosa, secretary-treasurer.——The Marinette-Florence County Medical Society held its annual picnic at Marinette, July 21; the baseball teams wore masquerades.——The eighty-fifth annual meeting of the State Medical Society of Wisconsin will be at Madison, September 15-17. An abstract of the program was published in THE JOURNAL, July 31.——Dr. Julius H. Hess, Chicago, addressed the Milwaukee Pediatric Society, August 11, on "Infant Feeding."

CANADA

University News.—Dr. Donald C. Balfour of the Mayo Clinic, Rochester, Minn., has given the University of Toronto $4,000 to establish a lectureship in surgery, and the board of governors has accepted the gift; it will probably be used, the *Canadian Medical Association Journal* says, to bring noted surgeons to the university to deliver lectures from time to time.

"Eye Specialists" Swindle Another Woman.—A swindle similar to that reported under Mississippi in last week's JOURNAL was reported from Oshawa, Ont., August 7. Two men called at the farm of John Puckrin, introduced themselves as eye specialists from Montreal, made an examination of Mrs. Puckrin's eyes, told her that she would be blind within six months because of cataracts. The "experts" explained that Mrs. Puckrin could either go to Toronto for an operation, which would cost about $1,500, or be treated then and there with radium, which would cost $900. One of the pair then instilled a greenish liquid into Mrs. Puckrin's eyes and assured her it would save her sight. A physician in Whitby is said to have examined Mrs. Puckrin's eyes a few days after this performance and found that she had had no indication of cataract. One is described as fair, medium height, and wearing gray-rimmed spectacles; the other man was dark, short and stout; they traveled in a sedan.

Personal.—Dr. Hubert D. Kitchen of the Manitoba Medical College, and formerly a fellow in medicine of the Rockefeller Foundation, has been awarded the Prowse prize for original research; the subject of his treatise was "Goiter in Children: A Study in Treatment."——Dr. William F. Roberts, St. John, N. B., has been appointed director of the department of physiotherapy at the General Public Hospital.——Dr. Manly Finkelstein, for five years city bacteriologist, Manitoba, has resigned to engage in private practice.——Dr. Maxwell M. Wintrobe has been appointed to the Gordon Bell Memorial Fellowship of the College of Physicians and Surgeons at Manitoba; he will undertake research in connection with pernicious anemia and the leukemias, under direction of the medical research committee.——Dr. John D. McEachern has been elected president of the Winnipeg Medical Society.——Dr. Delbert J. Millar has resigned as chief medical referee of the Workmen's Compensation Board of British Columbia after about seven years' service, to engage in practice at Powell River; the commissioners and staff presented Dr. Millar with a smoker's cabinet and pipes and a sphygmomanometer as a token of their regard.

GENERAL

Inter-State Postgraduate Assembly.—The Inter-State Postgraduate Assembly of North America will be held in the municipal auditorium, Cleveland, Ohio, October 18-22. Preassembly clinics will be held in all Cleveland hospitals, October 14-16. Many distinguished foreign physicians will be present at this meeting.

Automobiles Kill 121 a Week.—Reports to the U. S. Department of Commerce from seventy-eight large cities in the United States for the four week period ending July 17 indicate that the total number of automobile fatalities for that period was 484. A summary of sixteen four-week periods as far back as May 23, 1925, shows that the smallest total number of deaths for any one of them was 350 for the period ending March 27, 1926, and the highest total 632 for the four week period ending Dec. 25, 1925. Five cities in this group showed no automobile fatalities for the four weeks ending July 17, 1926.

American Academy of Physiotherapy.—The annual meeting of this society will be at the Hotel Pennsylvania, New York, September 6-7, under the presidency of Dr. Frank B. Granger, Boston. Among the speakers will be Dr. Sinclair Tousey, New York, "Accidents from Electricity"; Dr. William D. McFee, Haverhill, Mass., "Medical Diathermy"; Dr. Abram Bern Hirsch, New York, "Physiotherapy Technicians; Their Training and Supervision," and Dr. Louis F. Bishop, New York, "Relation of Physiotherapy to the Treatment of Heart Disease." Dr. William S. Bainbridge will be toastmaster at the banquet Monday evening, and among the guests will be Dr. Wendell C. Phillips, New York, President, American Medical Association.

Society News.—Dr. Philip H. Cook, Worcester, Mass., has been elected president of the New England Roentgen-Ray Society; Dr. Curtis H. Jennings, Fitchburg, Mass., vice president, and Dr. Merrill C. Sosman, Boston, secretary-treasurer.——The National Medical Association will hold its annual meeting at Philadelphia and Atlantic City, August 23-28, under the presidency of Dr. Walter G. Alexander, in whose honor a testimonial meeting will be held at the Union Baptist Church, Tuesday evening, and to whom the "quarter century gold cane" will be presented. The sessions will be in the public school buildings at Nineteenth and Wharton streets, and Nineteenth and Reed streets; Wednesday will be devoted to clinics and Friday evening and Saturday to recreation at Atlantic City.

An Estimate of Medical Expenditures.—U. S. Senator Ransdell in a speech on the floor of the Senate recently (THE JOURNAL, July 24, p. 254), gave an estimate of medical expenditures in this country which was said to have been made by Charles H. Herty, Ph.D., formerly professor of chemistry, University of North Carolina, and now president, Synthetic Organic Chemical Manufacturers' Association, New York. The estimate as given by Senator Ransdell was as follows:

Drugs, including "patent medicines"	$ 500,000,000
Physicians' services (estimated on basis of average income per physician annually of $1,500)	220,000,000
5 per cent interest on the $624,000,000 of hospital investments in lands, buildings and furnishings	31,000,000
Hospital maintenance	264,000,000
Total	$1,015,000,000

American Public Health Association.—The fifty-fifth annual meeting of this association will be at Buffalo, October 11-14, with headquarters at the Hotel Statler. The regular conference of the New York State Health Officers and Public Health Nurses will be held in conjunction with this meeting and will present a separate program, October 12; there will be special sessions on mental hygiene, the teaching of health in colleges, and milk supply; particular attention will also be given the subjects of measles, ventilation, the pollution of boundary waters, and rural hygiene; in all, 140 speakers are listed on the program. Members of the association and their families will receive a 25 per cent reduction on railroad fare traveling to and from the meeting, and nonmembers may apply for reduced fare to the executive secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York, who will also provide other information and programs for the meeting if requested.

Proposed Survey of Hospitals for Negroes.—At a recent conference at the headquarters of the American Medical Association of representatives of organizations interested in medical schools and hospitals for negroes, Dr. Henry M. Green, Knoxville, Tenn., president, National Hospital Association, and Dr. Carl G. Roberts, president-elect, National Medical Association, stressed the need for hospitals for negro interns; it was said that of the 208 known hospitals for negroes only seven had

been approved for internship, and that of the 100 or more colored physicians graduating each year, only about thirty can find hospital appointments; others present at the conference were Dr. William H. Walsh, of the American Hospital Association; Dr. Malcolm T. MacEachern of the American College of Surgeons, and Col. Joseph H. Ward of the U. S. Veterans' Bureau and Dr. Nathan P. Colwell and Mr. Homer F. Sanger, of the American Medical Association. It was decided that a survey of hospitals for negroes was a necessary preliminary step to improvement. An outline will be submitted to the three leading national organizations interested in hospital development with an estimate of the cost of a survey; efforts will then be made to secure funds to conduct the work.

Pan-American Congress of Directors of Health.—The first Pan-American Congress of Directors of Health will meet in Washington, September 27-29. This meeting is not to be confused with the Pan-American Sanitary Conventions that have been held heretofore. Thirteen American republics have accepted invitations to send delegates to the September conference, and in addition it is expected that various members of the Pan-American Sanitary Bureau will be present in their official capacity. The program provides for papers and discussions of questions of great interest to the Western Hemisphere. There have been a number of Pan-American Sanitary Conferences heretofore, and their influence in preventing the international spread of typhus fever, plague, smallpox and yellow fever, and in reducing the restrictions on commerce, has been immeasurable. These conferences culminated in the adoption of the Pan-American Sanitary Code at Havana in November, 1924, one of the most important events in the history of international sanitary regulations. This document, which is now a treaty, was in great part the work of the Pan-American Sanitary Bureau. In times past, no less than ninety epidemics of yellow fever have appeared in the United States, and in every instance, the disease was imported from places in Latin America. There are today fewer cases of yellow fever in Latin America than at any other time in the history of the disease; for the first time in the history of the United States' Quarantine Service, not a ship was detained during the fiscal year 1925-1926 on account of yellow fever. Bubonic plague, which prevails in some Latin American countries, will require the attention of health officers for many years. It behooves all nations to cooperate in the eradication of plague, and in this, as in other similar problems, the Pan-American Sanitary Bureau will continue to be actively engaged. The work of this bureau must necessarily increase unless nations resort to quarantine restrictions for the prevention of pestilence; this the bureau is endeavoring to avoid.

LATIN AMERICA

Free Antituberculosis Serum.—The National Department of Hygiene of Argentina resolved in April to administer free to those requesting it at the Bacteriologic Institute or at the health offices the antituberculosis serum prepared and given according to the formula of Calmette.

Lepers Dismissed.—Certificates of dismissal were given to twelve patients of the leprosarium of Cabo Blanco, May 16, after they submitted to rigorous tests by the head of the institute, Dr. Benchetrit; according to the *Bulletin of the Pan-American Union* they were declared cured.

Research Institute at Panama.—The president of Panama has invited a party of professors from Johns Hopkins, Harvard, Minnesota and the U. S. Department of Agriculture to come to Panama, where they will establish a central research laboratory at Penonomé to study conditions of the soil favoring the development of hookworm and its epidemiology and treatment. The International Health Board of the Rockefeller Foundation is financing the study (THE JOURNAL, April 17, p. 1220).

Recrudescence of Yellow Fever in Brazil.—The *Folha Medica* states that the recent military maneuvers in Brazil seem to have been responsible for a number of scattered cases of yellow fever in the last few months in three states. The soldiers from the southern states were exceptionally susceptible to the disease when they encountered it for the first time in the north. The small focus at Pirapora is in direct railroad communication with Rio, and vigorous prophylactic measures have been taken.

Personal.—Dr. Afranio do Amaral of the Butantan Institute, São Paulo, Brazil, has been invited to organize a section for the study of animal poisons, toxins and antitoxins in the Institute of Tropical Biology and Medicine, Harvard University. —— Dr. Waldo L. Schmitt of the Smithsonian Institution, Washington, D. C., recently returned to that city after studying the work on antivenom serums at the Butantan Institute, São Paulo, Brazil.——Dr. F. Sierra is director of the newly inaugurated sanatorium for the tuberculous, at Tlalpam, the first sanatorium of the kind to be organized in Mexico. It has accommodations for forty patients. The directors of the national railroads initiated the movement for construction of the sanatorium.——An honorary degree has been conferred by the University of Mexico on Prof. H. Obermaier of the University of Madrid, in tribute to his research on prehistoric anthropology.——The Wilde prize is awarded annually by the Buenos Aires Sociedad de Beneficencia for exceptional devotion among the staffs of the various public hospitals. The recipient this year was Dr. F. Arancibia of the Children's Hospital.——Dr. C. A. Castaño, Buenos Aires, has been elected an honorary member of the Berlin Obstetric and Gynecologic Society.

FOREIGN

Pediatrics Congress Postponed.—The annual meeting of French-speaking pediatrists, which was scheduled to convene at Lausanne in September, has been postponed till next year on account of the low exchange rate of the franc.

Cholera Epidemic at Shanghai.—A newspaper report, August 7, stated that the outbreak of cholera among the natives of Shanghai, China, in the Pootung district is causing more than 1,000 deaths a day, but that only two of the 20,000 foreign residents had died. This is a densely crowded and unsanitary area in which about 1,500,000 natives dwell; conditions are such that it is impossible to obtain an accurate account of the number of deaths from cholera. A later report indicated that the epidemic had abated to some extent with the advent of cooler weather.

British Medical Association Election.—At the annual meeting of the British Medical Association, Nottingham, July 20, Mr. Robert George Hogarth, senior surgeon, General Hospital, Nottingham, was inducted into office as president for 1926-1927, and Sir Robert W. Philip, honorary physician to the king in Scotland, and professor of tuberculosis, University of Edinburgh, was elected president for the year 1927-1928. The Gold Medal of Merit of the association was presented to Sir Humphry Rolleston in recognition of his distinguished service to the profession and to the association. The Sir Charles Hastings Clinical Prize was presented to Dr. Norman Porritt, general practitioner of Llandudno, for a clinical study in the course of his daily work of "The Abdomen in Labor." Among the foreign guests at this meeting were Dr. Evarts A. Graham, St. Louis; Dr. Konrad E. Birkhaug, New York; Dr. Edward H. Cary, Dallas, Texas; Dr. Mary E. Botsford, San Francisco; Dr. Elmer I. McKesson, Toledo, Ohio; Dr. F. Hoeffer McMechan, Avon Lake, Ohio, and Dr. James W. Elphinstone, Pittsburgh.

The representative body of the association unanimously approved the negotiations made last year in South Africa by its secretary, Dr. Cox, and demonstrated its appreciation of his work in South Africa in the cause of unity in the medical profession and in bringing about the new organization, "The Medical Association of South Africa (British Medical Association)." The treasurer reported that the income of the British Medical Association in 1925 was £131,000; in 1924, it was £122,000, and in 1923, £117,000. The accounts show a similar rise in expenditure, the increase in both sides of the ledger being due to the increase in membership in the association. The *British Medical Journal* earned for advertising £44,370 in 1925, and printed 1,778,000 copies of the journal. The 1928 meeting of the association will be held in Cardiff.

Deaths in Other Countries

Dr. **C. de Mooy,** The Hague, ex-chief of the army medical department in the Netherlands, aged 92. He devised tents, litters and other articles currently used by the military in transportation of the wounded, and was called the "Jules Verne of the air" on account of his suggestion in 1892 that a captive balloon might be utilized to transport the wounded. ——Dr. **Joaquín de Salterain,** Montevideo, formerly minister of foreign relations for Uruguay, senator, chief of the public health service and author of "Intimidades," and of works on ophthalmology.——Dr. **A. Lesser,** emeritus professor of legal medicine at the University of Breslau, aged 75.——Dr. **G. Dieballa,** professor of diseases of metabolism, and Dr. **G. Hainiss,** privatdozent of vaccination, both of the University of Budapest. —— Dr. **G. Rioux,** Bordeaux, succumbed to a professionally acquired septicemia. The decoration of the Légion d'honneur was conferred posthumously.——Dr. **J. Casasayas,** professor of pediatrics at the University of Barcelona.——Dr. **M. Ménard,** radiologist, Paris, August 2, aged 53, of cancer of professional origin.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 31, 1926.

Annual Session of British Medical Association

At the ninety-fourth annual session of the British Medical Association, recently held at Nottingham, Mr. R. G. Hogarth devoted part of his presidential address to the progress of medical science. The decrease in the general rate of mortality was, he said, one of the most striking proofs of the rapid forward march of medical science. It had fallen by nearly a half in fifty years. The birth rate had fallen by even a larger proportion in the same period, and the net total figures of the population continued to show an increase only because of the longer life. More desirable than to make a brave show in the statistical tables and increase the number of nonagenarians and centenarians, however, was to raise the general standard of health among all ages of the community. Would it not be better for the state, if we took pride, not in rewriting the tables of mortality but in raising health conditions to a higher level? The state must concern itself more and more with the health of the nation. Public opinion had to be educated continuously and had proved amenable to tactful handling. For example, the compulsory notification of diseases was now extended to as many as twenty-two notifiable diseases, and would probably be extended much further in the near future. The scope of preventive legislation was almost limitless, and we were likely to see the state interfering—or intervening—more and more in the interests of public health. The state was beginning to assert its regulative powers in departments of social and even family life. They might expect sharp controversy if and when the state concerned itself directly with eugenics and asserted its solicitude for a generation not yet born, not by the provision of cradles and nurseries but even by the determination of parentage itself. Now that the idol of state socialism had been set up, soon or later the theorists would attempt to invest the ministry of health with increasingly autocratic powers, and would seek to transform the whole medical service of the country into a state service, with state hospitals, state examinations and the state payment. Whether this would be as efficient as the present system was very doubtful.

At the representative meeting, the satisfactory position of the association in point of membership was described. The membership now amounts to 31,600 which is 2,000 more than last year. The increase has been 3,000 in the last three years. The organization overseas is proceeding satisfactorily. There is good reason to be gratified with the steps taken last year as to affiliation with the Canadian Medical Association. As far as India is concerned, no very active steps have been taken or could be taken in the past, but it is hoped that something will be done in the future for the better organization of the profession there. A resolution was carried expressing gratification with the arrangement whereby there will in future be only one organized body representing the profession in South Africa. This arrangement was arrived at as the result of negotiations between the South African committee, representing the branches of the British Medical Association, and the South African Medical Association. A congratulatory cable was sent to the new South African Association, which now forms an integral part of the British Medical Association. Dr. Alfred Cox, medical secretary of the association, was thanked for this successful result of his mission to South Africa. With consummate tact and persuasive ability he overcame the opposition of the separatist element by showing them that their interests would be best served by membership in one great organization, while at the same time enjoying perfect autonomy.

Postgraduate Hostel in London

The immense size of London with its dozen large hospitals which are also medical schools, to say nothing of the host of smaller and special hospitals, has proved an insuperable bar to the centralization of postgraduate teaching. Hence the various organizations established from time to time, including the present fellowship of medicine, have been only a partial success, in spite of much well directed effort of the leaders of the profession. But one form of centralization appears well on the way to accomplishment. Physicians who visit London for the purpose of postgraduate study have long felt the want of opportunity to meet socially their teachers and fellow students. On the initiative of Mr. A. P. Bertwistle, a scheme has been brought forward and has received influential support. The hostel is at the Imperial Hotel, Russell Square, which is near many of the teaching hospitals, the British Medical Association's house and the Royal Society of Medicine. The management of the hotel has provided the hostel with smoking and reading rooms and a recess in the dining room for the sole use of physicians. Physicians are free to use these rooms whether resident in the hostel or not. The aims of the hostel may be thus summarized: 1. A warm welcome will be extended to all medical visitors coming to London. This is considered especially due to those from the dominions and from foreign countries as a slight return for the hospitality lavished on us by our cousins over the seas. 2. Exchange of thought among visitors coming from different parts of the world should be valuable. This should take place without the medium of lectures. Informal discussions will be arranged periodically. Different speakers selected from the residents will, on other occasions, deal with the various aspects of a single disease. 3. It is felt to be desirable that visitors from the dominions and foreign countries should have the opportunity of hearing the views of our provincial physicians and surgeons; London men are probably equally anxious to hear them. Under existing conditions, visitors often have no time to go to the provinces. 4. The work of all postgraduate institutions, especially the fellowship of medicine, will be furthered. 5. There will be a "ladies' night" occasionally, in order to promote the social side. Residents and nonresidents will then be able to invite guests. A speech on some topic of general interest or a dance will follow the dinner.

The Sensitiveness of Plants

Under the auspices of the British-Indian Union, the Indian scientist Sir Jagadis Bose, F.R.S., spoke at the Royal Society of Arts on "The Unvoiced Life." He said that a man's pretension as a highly sensitive being received a shock when certain plants were found to be a great deal more sensitive than the lord of creation. It must, however, be admitted that the plant was practically deaf, for it was little affected by sound. The case was quite different in regard to light, for a plant detected minute changes in the intensity of light unnoticed by the human eye. Still more wonderful was the wide range of its perception of different octaves of visible and invisible waves. Of the multitudinous ether waves, the human retina responded to a single octave. The plant not only responded to the ultraviolet but also to the invisible wireless waves at the opposite end of the spectrum. It was not unlikely that the plant possessed a quite unsuspected "sixth sense," for some of his records with plants showed a characteristic modification, due to the presence of certain individuals, which persisted even after exclusion of the factor of radiation from the human body. The deceptiveness of external appearances was illustrated by reference to the

famous "praying palm," which prostrated itself every evening as the temple bells called people to prayer at Faridpore. The tree appeared, when erect in the morning, like a living giant, twice the height of a man. Toward evening it leaned forward, bowed down its head, and pressed the ground with its crown of leaves in an attitude of devotion. Investigation showed, however, that there was no special sanctity attached to this performance, for all trees and their branches and leaves moved up and down in the course of the day unnoticed. The tree was never at rest; it was in a state of constant movement in definite response to stimuli from without. In the plant, drooping and withering occurred long after death. How, then, did the plant give its last answer? In man, at the moment of death, a spasm passed through the whole body, and similarly in the plant a great contractile spasm occurred accompanied by an electric spasm. In the script of the lecturer's death recorder, the line that up to this time was being drawn became suddenly reversed and then ended. This was the last answer of the plant. These mute companions, silently growing beside our door, had told us the tale of their life tremulousness and their death spasm by a script that we could understand.

Rheumatic Heart Disease in Children

A subcommittee of the British Medical Association, presided over by Sir Humphry Rolleston, has investigated the subject of rheumatic heart disease in children and presented an important report. The need of rheumatic children for prolonged care is as yet imperfectly realized. Here and there institutional accommodation is being planned, but for the most part the urgent need for this means of treatment is not recognized. The subcommittee insists that it is necessary for every large city to be provided with means for the institutional treatment of rheumatic children, in the course of which they can receive controlled rest with plentiful sunlight and fresh air concurrently with education over periods of months. The policy advised by the subcommittee comprises: (1) stricter attention to the prevention of damp in dwelling houses; (2) further investigation of housing conditions and of the geographic distribution of the disease; (3) pooling of material for investigation of the bacteriologic aspects of rheumatic infection in childhood; (4) careful and discriminating use of the operation of tonsillectomy, and (5) rapid expansion of the accommodation available for prolonged institutional care of rheumatic children. The subcommittee says that it is impossible not to accept the tradition that rheumatism flourishes in a climate preponderatingly damp and cold, and that our own notorious climate is an important factor in increasing the prevalence of the disease. This view receives strong support from the fact that here, as in Scandinavian countries, it is a disease of the colder and wetter six months of the year. Although technically the rheumatic infection may not be a "poverty disease," it is certainly a disease of the poorer classes. There is abundant evidence to associate rheumatic infection with damp houses. Roughly, nearly two thirds of rheumatic patients are first infected when living in damp rooms. The disease in England is essentially one of children in the elementary school, suffering from tonsillar sepsis. Powerful predisposing factors are climate, age, social status, industrialization, damp dwellings and tonsillar infection. Of the minor factors, attendance at school is probably the most important. Nutrition and diet have not yet been proved to have a definite rheumatic predisposing power. Conditions of great poverty, destitution, underfeeding, overcrowding and excessive dirtiness do not seem to have an influence specifically toward rheumatic infection. Nearly two thirds of rheumatic cases come from damp rooms—ample confirmation of the traditional association between rheumatism and damp. Is this the missing factor?

PARIS

(From Our Regular Correspondent)

July 28, 1926.

A Medical Club

Paris is to have a Foyer médical, or medical club, after the manner of London, Stockholm and Copenhagen. The location has already been chosen; the work of organization is about completed, and the dedication has been tentatively set for Oct. 15, 1927. The foyer will occupy the second floor of a magnificent private mansion located on Avenue d'Iéna and facing the square in the center of which stands the statue of Washington. The mansion was formerly owned by Prince Roland Bonaparte, who died three years ago and who was a great lover of the sciences. He had accumulated in this residence a fine zoological collection, using his vast fortune for that purpose. He bequeathed his collection to the Muséum d'histoire naturelle, and his mansion was purchased by the Société du canal de Suez. The first floor of the mansion is occupied by the Société de géographie. The second floor, with two terraces, affording an admirable view of the Seine and of Paris, will be occupied by the Foyer médical. The quarters have been leased by the society organizing the movement for a period of eighteen years. The capital stock is in the form of 100 franc bonds bearing 6 per cent interest, and is placed solely in the hands of physicians and pharmacists.

This is not the first time that the idea of a foundation of this kind has taken shape. In 1900, the medical club of Paris, located on Avenue de l'opéra, was established, but it was discontinued at the end of two years, its funds having become exhausted. Other projects launched in its place failed one after another for lack of funds. The fact of the matter is that very few Paris physicians frequented the club médical. Those who desired a recreation center were more inclined to seek out other clubs where they came in contact with Paris society and where they formed acquaintances that would prove useful in building up their clientele, instead of a club where they would meet only confrères and find themselves placed on a plane of equality, whereas the medical profession is divided today into rather sharply demarcated classes proud of their titles—professors, hospital physicians, former hospital interns, and others—where, too, they would run the risk of encountering colleagues with whom they were not on good terms and whom they would prefer to avoid. Physicians from the provinces, stopping in Paris, would sometimes visit the club a first time but, finding no familiar faces, would not come again. Then, too, such a club entails very heavy expense. In France it is customary to count on the games to furnish a large portion of the funds needed for general expenditures, but the club médical had dispensed with games of all kinds.

The new Foyer médical that is being organized thought it advisable to take account of the experiences of the club médical. Then again, it is planned to admit to the foyer not only all the physicians of France and foreign physicians sojourning in Paris, but also the pharmacists and the senior students in the medical schools. There will be show cases for permanent exhibits of instruments and pharmaceutic products, which it is expected will have great advertising value. There will also be lecture rooms, halls for special gatherings, a restaurant, a library, and an information office for physicians from the provinces and from foreign countries. Foreign physicians in possession of a diploma entitling them to practice in their own country will be admitted, but their number will be limited to 400.

The committee on organization has chosen as president Prof. Charles Richet; as vice presidents, Prof. Jean Louis Faure, Professor Goris and Dr. Dopter, medical inspector of the army medical corps; as secretary general, Dr. Monnot, and as treasurer, Dr. Thierry, secretary general of the Asso-

ciation générale des médecins de France. Other members of the committee are Drs. Crouzon, Dartigues, Lardennois, Le Mée, Molinéry, Ménestrel and Noir.

The Sanitary Airplane

The great interest awakened by the sanitary airplane exhibited in the Grand Palais during the "journées medicales" (THE JOURNAL, August 14, p. 503) has induced the minister of war to furnish more complete information on the results secured by this new method of transporting the wounded in time of war.

It was toward the close of the recent war that Dr. Chassaing, member of the chamber of deputies, sought to interest the Service de santé militaire in this new method, which was originated by Dr. Reymond, senator of the republic, who was one of the pioneers of aviation in France, and who volunteered his services as an army aviator and was killed by the enemy, while flying, toward the end of 1914. The project advanced but slowly, owing to the interminable discussions before the technical commissions, which took a long time in deciding on the best model for a sanitary airplane. The Morocco campaign served to speed up their decisions. In that rugged country, which has few roads and only a single line of railway, care of the wounded in battle is a difficult problem. At the beginning of the Riffian war, the French troops were distributed in small commands over a large area, occupying isolated blockhouses, often with no other medical personnel than a male nurse. Men severely wounded could be given no adequate medical care, and their evacuation to sanitary centers could be accomplished only by commissary trucks returning empty, which were often attacked on their return by the Moroccans, or, at best, the unfortunate wounded men were subjected to a terrible jolting, which caused great suffering. But many airplanes were used in that war, and that was the most useful branch of the service in Morocco, especially since the Moroccans had no planes themselves. The airplanes soon came to be used to pick up and transport the gravely wounded. In one instance the surgeon was transported by airplane. Dr. Tuffier flew to the assistance of General Puymiro, who was severely wounded in the chest and unable to be moved without great risk.

At first large planes of the Bréguet type, weighing (empty) 1,112 Kg. and with a loading capacity of 2,000 Kg. and a 200 horse power engine, were employed. The cabin could accommodate three wounded men, two seated and one reclining. But planes of this type require large fields for the take-off and for landing, which could not always be found in the campaign area, especially in the hilly regions. The Service de santé adopted therefore a new and much lighter type of machine, the Hanriot plane, which can transport only one wounded person reclining, but the introduction of the litter, owing to a long extension plate, is much easier than in the Bréguet type of machine, which has only a narrow opening in the side, as in ordinary passenger planes. The Hanriot sanitary plane H. D. 14 is equipped with a Rhone motor of 80 horse power. Its length is 10.26 meters, its carrying surface is 39.9 meters, its weight (empty) 535 Kg., or, when loaded to full capacity, 790 Kg. Its speed is 115 kilometers; its *plafond* is 4,000 meters. It can take off and land in a very small field, and this advantage, which is important in rugged regions such as the Riffian mountains and the hills of Djebel Hauran in Syria, compensates for the fact that only one wounded man can be transported in it. The Bréguet plane can land only in large level areas prepared in advance, which may be far away from regions in which small commands are operating. The Hanriot plane can land almost anywhere, near to the combatants, and the litter with the wounded man can be put into the plane in a few seconds. In Syria, the Hanriot plane was used to relay the wounded to the larger Brégnet plane. There are now in service in Syria eight Brégnet and eight Hanriot planes, and in reserve two Bréguet and two Hanriot planes. In Morocco there are twenty Hanriot and twenty-eight Bréguet planes in service and seven Bréguet and six Hanriot planes in reserve.

STATISTICS OF THE ARMY MEDICAL DEPARTMENT

In 1920, in the Army of the Levant, eighty-two wounded men, isolated at Aintab post, were evacuated by Bréguet planes. In 1921, more than 150 wounded men from the forces operating on the Euphrates were transported in less than two hours over the 250 kilometers that separated them from Aleppo. In Morocco, in October, 1921, eighteen severely wounded men were evacuated in thirty-six minutes, by means of six planes grouped *en escadrille*, a distance of 80 kilometers, whereas ordinary means of transport would have required three days. Furthermore, most of the wounded men would certainly have died during the transportation. In 1923, in the Atlas Mountains, more than 700 wounded men were evacuated by airplane to the hospitals at Meknès, Fez and Casablanca. The distances traversed ranged from 80 to 560 kilometers. Some days veritable convoys were arranged, as many as twenty Bréguet planes being grouped together in a flight. Seventy wounded men were evacuated on one day and fifty-one on the day following. In 1925, 987 flights with wounded men were made in Morocco and 118 in Syria. From 1920 to the end of 1925, more than 3,000 evacuations of wounded men were made by plane in Morocco and Syria, all without an accident. There has been only one accident thus far in 1926.

Only those with serious wounds of the abdomen, thorax or cranium, or with multiple fractures, for whom surgical intervention was urgent, have been thus evacuated. The transportation by ordinary means would likely have proved fatal. In a European war this mode of evacuation would be reserved for the classes just described, for evacuation by automobiles and by sanitary trains would be possible, owing to the fact that the conditions would be more favorable than in the colonial wars.

BERLIN

(From Our Regular Correspondent)

July 24, 1926.

The Retirement of University Professors

As a result of the provision contained in the new federal constitution to the effect that government officials, clerks and employees must be pensioned at the age of 68, at the latest, many head professors of the medical faculties, who had reached the age limit, have been retired. Professors who had not felt that they needed to be pensioned as yet have complained bitterly of their enforced retirement. It may be that many of these were perfectly able to carry on for some time longer, but, in general, when the age of 68 has been reached it is time for younger men to take the helm. In Germany, enforced retirement on attaining a certain age is all the more justified for two reasons: (1) During the war, many professors aged more rapidly than normally, and (2) during the war, fewer promotions were made, and there is consequently a larger number in the oncoming generation awaiting openings. One thing that makes the pensioning of head professors more endurable is the fact that it affects only the management of institutes, clinics, and the like. Otherwise, pensioned professors are entitled to continue holding their lectures; they remain members of the faculty and receive also the entire salary and lecture fees that they collect from students. During recent years, the aforementioned retirement regulation has brought about many changes in the medical faculty at Berlin and elsewhere.

At the University of Berlin the following head professors of the medical faculty have been retired: Rubner, the physiologist, and Hans Virchow, the anatomist. At the end of

this semester, F. Kraus and Goldscheider (internal medicine clinics); F. Strassmann, legal medicine, and Williger, dentistry, will be pensioned. As the post left vacant by the death of Hofmann, physiologist, must be filled, and an occupant for the chair of pharmacology must be found, there are six professorships awaiting new incumbents. It is the general opinion that Kraus will probably be succeeded by his former pupil von Bergmann of Frankfort-on-the-Main, the son of the famous surgeon, now deceased. As to the successor of Goldscheider, the outcome is not as yet certain. One prominent candidate is Professor Umber, director of the Charlottenburg Municipal Hospital, who has made a name for himself in the field of diseases of metabolism—more particularly by his excellent textbook.

Colored Photographs and Films of Operations

Until recently we have had to rest content with photographs in black and white or have had to resort to colored drawings of operations. In the former, the color was lacking, which is exceedingly important in a medical picture, while in the latter the color is present but the richness of detail and the exactness of the photograph are wanting, especially since the artist, on account of the rapid changes in the operative picture, is obliged to work chiefly from memory. The invention of the colored photograph, however, has made possible the production of pictures that combine the exactness of photographs with the naturalness of the colors. The long period of exposure was, however, a great disadvantage. Plates for color photographs must be exposed from fifty to sixty times longer than ordinary dry plates of normal sensitiveness, because the light passes through not only the color filter of the plate but also the yellow disk that is placed in front of it. Short-exposure photographs on color plates are possible, therefore, only under the most favorable light conditions and by the use of a very strong objective. Photographs of operations, however, if they are to show the details sufficiently clearly, must not be too much reduced in size; therefore, an objective with a long focus, which can be so regulated as to secure sharpness of outline, must be used. Operations in the open air and in the bright sunlight are impossible, but even under such conditions an exposure of fifteen seconds would be required, while in an operating room, even though it were as brilliantly illuminated as a photograph gallery, sixty seconds exposure would be needed. Exposure periods of such length are out of the question in photographing operations in which every second is valuable. One must resort therefore to artificial light and endeavor to produce on the operating table a degree of illumination so far exceeding the brightest sunlight that the exposure period can be reduced to a few seconds. The conditions have been met by the gas-filled high-power incandescent lamp. The colors of the light that is produced are such that the use of a yellow filter is superfluous. In the former the period of exposure has been reduced to one seventh of what it was formerly and makes gas-filled incandescent lamps much superior to the arc lamp, in using which, a yellow filter is needed the same as in daylight photography.

Dr. von Schubert, a physiologist in the Women's Clinic of the Charité Hospital, Berlin, has succeeded in producing colored photographs of gynecologic operations with the short exposure of from one to two seconds, although the quantity of light passing through the objective was reduced to one seventh in order to secure the proper sharpness of outline. As the source of light he used an Osram-Nitra 5,000 watt lamp, which had a maximum light power of 10,000 candles. By means of a reflector the light is thrown on a series of mirrors placed at an angle of 45 degrees, from which it is directed to the operating table, by which method an illumination equal to 250,000 light units is secured. That is from two and one-half to five times as strong a light as would be possible to obtain by the use of daylight, for a surface illuminated by the sun presents, varying with the angle of incidence of light rays, an illuminating power of from 50,000 to 100,000 light units.

"Agfa" plates, 9 by 12 cm. in size, are employed, since only with these can one dispense with the yellow disk in working with Nitra light. The photographs produced excite admiration on account of a perfectly natural coloring and a clearness of the minute details. For example, one can clearly distinguish the course of the smallest blood vessels in the organs exposed by the operation; also the structure of ulcers and the like. These colored photographs, of which a considerable number have been produced, may therefore be regarded as excellent examples of color photography. The described equipment will serve for preparing colored films of operations. Dr. von Schubert uses for this purpose the Horst method. Special films for color photography after the manner of the special plates with which the colored picture is secured by single exposure have not yet been produced, so that it is still necessary to prepare three partial pictures. By the Horst method, the three partial negatives are taken simultaneously, although only one objective and only one film strip are employed. By means of three small mirrors placed before the objective the picture rays coming from the object to the photograph are directed into the objective, so that three congruent pictures result, which are placed one after the other on the film strip, being illuminated simultaneously through a red filter, a green filter and a blue filter, respectively. After every exposure, therefore, the film must be advanced three picture lengths. Although each partial picture receives only a third of the available light quantity and although that third is further diminished by the color filter, the light power produced by means of the 5,000 watt lamp has been found sufficient, with an exposure of only one thirty-second of a second, as is required for film photographs, to secure amply exposed partial negatives. For these color film photographs an objective with a short focus and high light power is used, which gives the picture sufficient sharpness of outline without darkening.

Through a telescope the photographer observes the course of the operation, and when the phase of the operation that is to be photographed begins, he sets the cinematograph in motion by the turn of a switch, while an electric motor does the cranking.

In projecting the colored film on the screen, an apparatus is used which superimposes the three partial pictures one over the other and introduces the necessary complementary filters.

A Shelter for Alcohol, Cocaine and Morphine Addicts

In the Tiergarten district of Berlin, the municipal authorities have established a care-taking center for alcohol, cocaine and morphine addicts. The families of the patient are also provided for in case of need. A physician is the director of the shelter.

Marriages

Harlan P. Mills to Mrs. Landonia G. Thompson, both of Phoenix, Ariz., at San Bernardino, Calif., June 28.

Victor S. Randolph, Phoenix, Ariz., to Miss Claire Tatum of Dallas, Texas, July 28.

Frances E. Giles, Ripley, Miss., to Mr. Marius Mannik, Los Angeles, May 16.

Ronald LeRoy Ross to Miss Gertrude M. Hummer, both of Akron, Ohio, May 15.

Albert L. Lash to Miss Mildred Pikowsky, both of Chicago, August 8.

Deaths

George Reeves White ✱ Savannah, Ga.; Columbia University College of Physicians and Surgeons, New York, 1891; in 1909 served as a member of the House of Delegates of the American Medical Association; Spanish-American War veteran; formerly part owner and chief of staff of the Park View Sanitarium; aged 60; died, July 1, at Pasadena, Calif., of tuberculous enteritis.

Charles Roscoe Luce ✱ Washington, D. C.; Georgetown University School of Medicine, Washington, 1885; formerly professor of medicine at his alma mater; at one time on the staffs of the Providence Hospital and St. Ann's Infant Asylum; served during the World War; aged 63; died suddenly, July 17, at his summer home in Gloucester, Mass., of cerebral hemorrhage.

John Duncan Quackenbos ✱ New York; Medical Department of Columbia College, New York, 1871; member of the New Hampshire Medical Society; professor emeritus of rhetoric, Columbia University; author of "History of the English Language," and a "Text-Book on Physics"; aged 78; died, August 1, at his summer home at Lake Sunapee, N. H.

Raymond Hubert Gaynor Laub, Brooklyn; Long Island College Hospital, Brooklyn, 1909; member of the Medical Society of the State of New York; superintendent of the Greenpoint Hospital; aged 42; died, August 1, at the Flower Hospital, New York, of injuries received in an automobile accident.

John M. Parrington, Emporia, Kan.; Medical College of Indiana, Indianapolis, 1898; member of the Kansas Medical Society; formerly chairman of the city board of health, and the Associated Anesthetists of the United States and Canada; aged 57; died, May 16, of cerebral hemorrhage.

Charles Rockwell Payne ✱ Wadhams, N. Y.; Cornell University Medical College, New York, 1906; formerly consulting physician and lecturer at the Champlain Valley Hospital, Plattsburg; at one time secretary of the Essex County Medical Society; aged 45; died, July 30.

Howard Wilfred Cleasby ✱ Lancaster, N. H.; Dartmouth Medical School, Hanover, 1913; member of the American Psychiatric Association; served during the World War; on the staff of the Lancaster Hospital; aged 34; died, July 15, of Vincent's angina.

Lewie Allen Griffith, Columbia, S. C.; Kentucky School of Medicine, Louisville, 1887; at one time a druggist; formerly mayor of Columbia; Spanish-American war veteran; aged 60; died, July 17, of pneumonia, following injury and infection of the scalp.

James Harvey Whitcraft ✱ Wilkinsburg, Pa.; Johns Hopkins University Medical Department, Baltimore, 1910; served during the World War; aged 43; on the staff of the Columbia Hospital where he died, July 22, following an operation.

Gid Malcolm Hall, Lenoir City, Tenn.; Chattanooga Medical College, 1906; member of the Tennessee State Medical Association; served during the World War; aged 43; died, July 22, at Parrottsville, of a self-inflicted bullet wound.

Bernard Simon Talmey, New York; University of Munich, Germany, 1892; member of the Medical Society of the State of New York; formerly on the staff of the Metropolitan Hospital; aged 64; died, June 30, of bronchopneumonia.

Joshua W. Coakley, Creston, Iowa; Bennett Medical College, Chicago, 1883; Barnes Medical College, St. Louis, 1893; member of the Iowa State Medical Society; aged 71; died, July 16, at the Greater Community Hospital.

John H. Allingham, St. John, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1910; on the staffs of St. John County Hospital, East John, and St. John Public Hospital, where he died, June 3, aged 39.

Oscar Samuel Hoffman, Omaha; Bellevue Hospital Medical College, New York, 1876; member of the Nebraska State Medical Association; on the staff of the Wise Memorial Hospital; aged 70; died, July 23, of heart disease.

Oscar T. Peterson ✱ Minot, N. D.; University of Illinois College of Medicine, Chicago, 1895; on the staffs of the Trinity and St. Joseph's hospitals; aged 60; died, July 17, at a local hospital, of cellulitis and nephritis.

Robert Eugene Wine, Nokesville, Va.; University of the South Medical Department, Sewanee, 1900; member of the Medical Society of Virginia; aged 49; died, March 15, at Washington, D. C., of chronic nephritis.

Joseph Moore Soniat, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1889; for nearly twenty years a member of the city board of health; aged 59; died, July 26, of heart disease.

William Horace Bennett ✱ Paris, Ark.; University of Arkansas Medical Department, Little Rock, 1895; past president of the Logan County Medical Society; aged 59; died, July 18, following a long illness.

Andrew Adolphus Henske ✱ St. Louis; Washington University School of Medicine, St. Louis, 1875; New York University Medical College, 1877; aged 75; died, July 17, of carcinoma of the bladder.

Edgar Stanley Cristman, Barron, Wis.; Milwaukee Medical College, 1902; member of the Wisconsin State Medical Association; served during the World War; aged 48; died, July 20, of heart disease.

Thomas Northen, Lineville, Ala.; Atlanta Medical College, 1878; member of the Medical Association of the State of Alabama; aged 80; died, March 1, at West Palm Beach, Fla., of mitral regurgitation.

Silas S. Thompson, Washington, D. C.; Howard University School of Medicine, Washington, 1904; served during the World War; aged 46; died, July 24, at Freedmen's Hospital, of cardiorenal disease.

George Thurston Spicer ✱ Providence, R. I.; Medical School of Harvard University, Boston, 1903; formerly on the staffs of the Rhode Island and Providence Lying-In hospitals; aged 52; died, July 26.

Charles Francis Fleming, West Rutland, Vt.; University of Vermont College of Medicine, Burlington, 1915; member of the Vermont State Medical Society; aged 33; died, June 10, of acute nephritis.

Francis Edward Drumheller, Sunbury, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; aged 62; died, April 13, of heart disease.

Gerald Louis McGonigle, Frankfort, Kan.; University Medical College of Kansas City, 1913; member of the Kansas Medical Society; aged 36; died, June 27, of acute dilatation of the heart.

Jesse B. Stone, Brookshire, Texas; University of Louisville (Ky.) School of Medicine, 1887; aged 67; died, May 15, at the Central Texas Hospital, Brownwood, of cerebral hemorrhage.

William Montgomery Sweney, Red Wing, Minn.; Bellevue Hospital Medical College, New York, 1876; health officer of Red Wing for many years; aged 76; died, June 1, of chronic nephritis.

Charles H. Venn, Chicago; Rush Medical College, Chicago, 1876; formerly professor of anatomy at his alma mater; aged 83; died, July 22, of cerebral hemorrhage and arteriosclerosis.

S. George Hermance, Clarkson, N. Y.; New York Homeopathic Medical College, 1883; for twenty-five years health officer of Clarkson; aged 71; died, July 26, of cerebral hemorrhage.

George Cairnes, Mount Brydges, Ont., Canada; Trinity Medical College, Toronto, 1897; aged 63; died, recently, at the Victoria Hospital, London, of carcinoma of the pancreas.

Gabriel S. Felder, Memphis, Tenn.; Medical Department of the Tulane University of Louisiana, New Orleans, 1885; aged 65; died, April 2, of lobar pneumonia and influenza.

Abram E. Vineyard, Comanche, Texas; Atlanta Medical College, 1891; member of the State Medical Association of Texas; aged 70; died, April 12, of chronic myocarditis.

Lena Vaughn Ingraham, Cambridge, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1883; member of the Massachusetts Medical Society; died, July 16.

Seymour S. Richards, Frankfort, N. Y.; New York University Medical College, 1883; member of the Medical Society of the State of New York; aged 65; died, July 18.

James John Collie ✱ Geneva, N. Y.; Long Island College Hospital, Brooklyn, 1889; served during the World War; aged 60; died, July 28, of cerebral hemorrhage.

Henry Altshul, Hartford, Conn.; Medical Department of Columbia College, New York, 1887; aged 62; died, May 21, of lobar pneumonia and chronic myocarditis.

Charles Harlan Callender, Windsor, Conn.; Albany Medical College, New York, 1889; aged 59; died, June 3, at the Hartford (Conn.) Hospital, of appendicitis.

John D. Rucker, Cleburne, Texas; Vanderbilt University School of Medicine, Nashville, 1883; formerly county health officer; aged 60; died, April 19, at Dallas.

Mark C. Myers ● San Francisco; University Medical College of Kansas City, 1897; aged 64; died, July 16, at American Falls, Idaho, of heart disease.

Walter Franklin Keating, Cleveland; Medico-Chirurgical College of Philadelphia, 1905; served during the World War; aged 47; died, June 29, of pneumonia.

Israel Jones Woodward, Toms River, N. J.; Baltimore University School of Medicine, 1894; aged 56; died, March 18, at the State Hospital, Trenton.

Theodore Franklin Conover, Fort Washington, Pa.; Hahnemann Medical College of Philadelphia, 1879; aged 70; died recently, of cerebral hemorrhage.

Herman Philipp, Wichita, Kan.; University of Berlin, Germany, 1886; aged 63; died, March 23, at Rochester, Minn., of adenoma of the thyroid gland.

Nathaniel King Moxley ● Ironton, Ohio; Miami Medical College, Cincinnati, 1883; aged 66; died, July 24, of paralysis following cerebral hemorrhage.

Francis L. Flanders, Kansas City, Mo.; Chicago Medical College, 1868; aged 82; died, July 30, of arteriosclerosis and chronic interstitial nephritis.

Henry Clay Stevens, Wilmington, Del.; Howard University School of Medicine, Washington, D. C., 1891; aged 59; died, March 9, of endocarditis.

Frank L. Stone, Pendleton, Ind.; Physio-Medical College of Indiana, Indianapolis, 1874; aged 75; died, July 11, of cerebral hemorrhage.

Augustus Peter Dellett, New York; Bellevue Hospital Medical College, New York, 1891; aged 60; died, March 25, of chronic nephritis.

George H. Gildersleeve ● Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 50; died, July 25.

Charles Adelbert Gillin ● New Britain, Conn.; New York University Medical College, 1883; aged 67; died, June 23, of angina pectoris.

John H. Tripp, Togo, Sask., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1898; died, June 26, of angina pectoris.

Harry McK. Stevenson, Baltimore; Altantic Medical College, Baltimore, 1901; aged 47; died, recently, of mitral regurgitation.

George Seely Thompson ● Brooklyn; Dartmouth Medical School, Hanover, 1879; died, in July, at Windham, N. Y., of pneumonia.

Joseph W. Steele, Baltimore; University of Maryland School of Medicine, Baltimore, 1856; aged 95; died, July 16, of senility.

Julius B. Cushman, Derby, Vt.; Illinois Medical College, Chicago, 1896; aged 74; died, April 18, of carcinoma of the intestine.

Joseph Louis Hypolite Martel, Montreal, Que., Canada; University of Montreal Medical Faculty, 1905; aged 47; died, recently.

William Pond Cutler, Highland Park, Ill.; Pulte Medical College, Cincinnati, 1881; aged 67; died, July 31, of heart disease.

John V. Cummings, Dayton, Ohio; Cincinnati College of Medicine and Surgery, 1873; aged 79; died, June 10, of heart disease.

Alfred Oscar Williams ● Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1875; aged 75; died, May 28.

David R. Moore, Stanley, N. B.; University of Vermont College of Medicine, Burlington, 1879; aged 69; died, in June.

J. P. Carrington, Plainview, Texas (licensed, Texas, under the Act of 1907); aged 72; died recently, of chronic gastritis.

John Franklin Potts, Indianapolis; Louisville (Ky.) Medical College, 1889; aged 62; died, July 26, of angina pectoris.

Victor B. Barcroft, Litchfield, Ill.; Missouri Medical College, St. Louis, 1879; aged 70; died, July 23, of encephalitis.

William A. Connolly, Monroeville, Ind.; Columbus Medical College, 1876; died, July 21, of carcinoma of the liver.

John Richards, Laud, Ind.; Eclectic Medical Institute, Cincinnati, 1871; aged 91; died, July 16, of senility.

Correspondence

"TRACHOMA"

To the Editor:—The term "trachoma" should still be enclosed in quotation marks. Why? Because the diagnosis (?) is still being made only after the eye conditions to which it is being applied have reached an advanced stage. Royer in his plea for the need of epidemiologic research in "trachoma" (*Am. J. Pub. Health* **16**:706, 1926) seems not to have been aware of the epidemiologic, etiologic and therapeutic investigations in "trachoma," extending over more than three years, that the Bureau of Laboratories of the New York City Health Department made, beginning in the spring of 1910 and stopping at the end of 1913. These studies were published in the *Journal of Infectious Diseases* (**14**:261, 1914) and more fully in the Collected Studies of the Bureau of Laboratories, New York City Health Department, volume VII.

In these studies we clearly showed that the reason why opinions differed so much in regard to the cause and course of the conditions included under this name "trachoma" was that no one had reported a minute, comprehensive, individual study of a large series of cases extending over a period of years beginning in the acute stage. This we did and we included in our published report a critical review of the studies on "trachoma" to that date.

We came to the conclusion that the condition known as "trachoma" was caused (in at least the majority of cases studied by us) by members of the group of hemoglobinophilic bacilli (*Hemophylus influenzae, Hemophylus conjunctivitidis,* etc.) It is well known that this group of organisms, starting as excitants of acute inflammation of mucous membranes, may continue to act from the original attack or by repeated attacks, causing chronic interstitial inflammation as chronic sinusitis, laryngeal stenosis or chronic inflammation of the lungs.

Our studies also show plainly that "trachoma" is not as contagious as has been supposed, and that if the acute inflammations of the eyes are properly treated "trachoma" can be prevented.

I claim, in view of these studies, that there is less necessity for money to be spent on epidemiologic studies of "trachoma" than there is for money to be spent in treating all acute eye conditions and in teaching people how to care for their eyes. Of course, under existing conditions, the present chronic cases must also be handled; but if the new cases were treated properly the chronic cases would finally disappear.

ANNA W. WILLIAMS, M.D., New York.

THE BEHAVIOR OF THE PYLORUS

To the Editor:—The editorial on "The Behavior of the Pylorus" (THE JOURNAL, July 31) states that "it is currently concluded from roentgen-ray evidence in animals and in man, and from experimental evidence in animals, that the pylorus is normally open at the height of antral contraction and that every antral contraction is normally followed by the discharge of chyme through the pylorus." My experience in a large number of cases is directly contrary to this statement. There is no question about the fact that the pylorus apparently is open at the height of antral contraction, yet it does not follow that the pylorus is open at the height of every antral contraction. It is a common occurrence to see four or five peristaltic waves in succession complete their cycle at the pylorus without any opaque medium passing through.

ROBERT A. ARENS, M.D., Chicago.
Director, Radiological Laboratories,
Michael Reese Hospital.

"A DISPLAY OF FAKIRISM"

To the Editor:—Just after reading in your issue of July 24, page 269, "A Display of Fakirism," I chanced to read in *L'Illustration* of July 3 a short article on "La supercherie [humbug] du fakirisme." This article, by a French scientist, M. Paul Heuzé, described the demonstration before a body of scientists and journalists in Paris of some of the same acts exhibited by "Dr. Tahra Bey," who had hat pins thrust through his cheeks and across his throat, apparently through the larynx, and who also reclined on the points of nails. Dr. Heuzé insisted that there was no anesthesia in his case. He did not swallow his tongue, go into a cataleptic state or have weights put on.

These phenomena, including apparent death, burial and resurrection, are discussed in one of Robert Louis Stevenson's novels.

RICHARD DEWEY, M.D., Pasadena, Calif.

TULAREMIA AND CONJUNCTIVITIS

To the Editor:—The ocular glandular type of tularemia so accurately coincides with the clinical manifestation of Parinaud's conjunctivitis in its local and general symptoms and clinical course as to suggest that Parinaud's conclusions were well founded when he contended that the infection was of animal origin. Two cases of tularemia that I recently reported at the meeting of the Montana State Medical Association are so accurately described in de Schweinitz' textbook under the heading Parinaud's Conjunctivitis as to leave little to be added in a description of these cases.

Positive blood findings as reported from the Hygienic Laboratory in Washington conclusively established the etiologic factor as that of tularemia.

W. R. MORRISON, M.D., Billings, Mont.

Queries and Minor Notes

RAY AND LIGHT THERAPY IN OTOLARYNGOLOGY

To the Editor—Have you any information on the comparative value in end-results of tonsillectomy and ultraviolet-ray treatment (as with Kromayer or similar lamps)? Also comparative value of ultraviolet ray or quartz light therapy in acute conditions of the nose and throat as compared with generally accepted medical treatment? Are the light treatments out of the experimental stage?

B. M. JEWELL, M.D., Danville, Ill.

ANSWER.—For infection of the tonsils, the best treatment is still complete removal. It is true that ultraviolet radiation may for a few hours or a day overcome infection of the contents of the tonsillar crypts. When the infections recur, the patient suffers from the same symptoms as before.

Violet ray and quartz light therapy have not been scientifically established as of great value for conditions of the nose and throat, as compared with the generally accepted medical treatment. It is asserted by some that the application of ultraviolet radiation hastens recovery from some of the acute infections. Most acute conditions are, however, self-limited, so that no treatment should be given too much credit.

With every new type of treatment, especially along the line of mechanical or physiotherapy, some investigators become overenthusiastic and report glowing results. As time elapses, it is found that most of these measures give some relief to a small percentage of patients but fail entirely in many others.

DILATED VENULES ON CHEST

To the Editor:—Will you kindly inform me of the diagnostic significance of a ribbon-like line of dilated venules following the costal margin to the sternum in a person with some abdominal distress? Please omit my name.

M.D., Michigan.

ANSWER.—A ribbon-like band of dilated venules about the chest approximately at the diaphragm is significant of a compensatory circulation having been established following obstruction to the venous flow from the lower half of the body, usually in the inferior vena cava, particularly if associated with other signs. The frequent presence of this isolated phenomenon in apparently normal persons indicates that it may mean little or nothing.

PREVENTIVE INOCULATION AGAINST RABIES

To the Editor:—1. What advantage, if any, is there in using the graduated doses of twenty-one to twenty-five injections of rabies vaccine over the fourteen doses of equal strength? 2. How long does the immunity to rabies last after the injections are completed?

H. E., M.D., Iowa.

ANSWER.—1. There is no especial advantage in the use of the treatment requiring a considerable number of doses over that in which a smaller number are employed. Within recent years the killed virus has to a very considerable extent replaced the attenuated virus. A number of modifications of the Pasteur treatment are licensed by the Treasury Department under the law of July 1, 1902, and all are considered to be safe and effective.

2. The duration of immunity in man after a series of antirabic injections is unknown; while no general rule can be given, it is generally advised that an exposure to rabies more than six months after completion of a course of treatment should be followed by a new course of the prophylactic.

ANTIRABIC TREATMENT

To the Editor:—We are interested in securing comparative information regarding the relative value (clinical) of the antirabic human (Pasteur treatment) and the Sir David Semple fourteen dose treatment; and would appreciate also your giving us information as to where we could secure literature as to the technic of manufacture of the Sir David Semple method. We are at present using the Pasteur method, and we also are thinking of making the Semple treatment, but before doing so we want to be sure regarding its value.

BLUMME RAMOS, M.D., La Habana, Cuba.

ANSWER.—By reports received by the United States Public Health Service, as well as those found in the literature, it is indicated that the Semple fourteen-dose treatment for rabies is as effective in preventing rabies as the Pasteur method. The technic of the preparation of the material can be found in an article entitled "On the Nature of Rabies and Antirabic Treatment" by Sir David Semple (*Brit. M. J.* **2**:372 [Sept. 20] 1919).

ACIDIFIED MILK IN INFANT FEEDING

To the Editor:—I have been reading a great deal with regard to Marriott's success with the use of acidified milks in infant feeding, and he claims marked success with such products as cultured lactic milk, especially in cases that showed a definite acid deficiency. Granting this be true, why wouldn't dilute hydrochloric acid be of benefit in such cases, given in the feeding formula, and thereby saving a great expense by not having to buy milks of this sort put up by the manufacturers? Granting that hydrochloric acid could be used with advantage in this respect, what amount might one use and still stay within the bounds of therapeutic safety?

LESLEY E. WALLACE, M.D., Thebes, Ill.

ANSWER.—Acidified milk has been given a rather extensive clinical test during recent years. At present it is quite generally used and seems a valuable addition to our methods of infant feeding. Originally it was prepared by churning sour milk; later cultures of acid producing bacteria (*B. bulgaricus* or *B. acidophilus*) were added to sterilized sweet milk; more recently a given amount of acid has been added instead of the acid producing bacteria culture.

The good clinical results stimulated investigation as to the action and digestion of such feedings. The work of Marriott (*Am. J. Dis. Child.* **26**:542 [Dec.] 1923), in which he studied the acidity of the gastric contents of infants fed on human milk, cow's milk and acidified milk, among others brought out the following points: The normal infant, breast fed, at the height of digestion has a gastric acidity of about p_H 3.75. Infants suffering from infection and nutritional disturbances have a distinctly lower acidity of the gastric contents. Infants fed on sweet cow's milk mixtures have a lowered gastric acidity. This results from the "high buffer" value of cow's milk, by which one means that cow's milk is capable of neutralizing a considerable portion of the gastric acidity. Approximately three times as much acid must be added to cow's milk as to breast milk in order to bring the free acidity of the two to the same point. Marriott advocates feeding milk containing from 0.5 to 0.7 per cent of lactic acid. Such a milk and breast milk have a similar hydrogen ion concentration when equal amounts of hydrochloric acid are added to each. It is interesting to find that when sweet cow's milk

is soured with lactic acid forming cultures, the growth of the bacteria is inhibited when the acidity reaches from 0.5 to 0.7 per cent.

Faber (*Am. J. Dis. Child.* **26**:401 [Nov.] 1923) reported on the acidification of cow's milk with hydrochloric acid. This diminishes the "buffer" and is equivalent to increasing the hydrochloric acid present in the stomach. He raised the question as to the advisability of using an inorganic acid that is not completely oxidized in the body and thus throws a strain on the acid-base regulating mechanism. Lactic acid, on the other hand, is an organic acid and, while neutralizing the "buffer" of cow's milk, is completely oxidized. Hydrochloric acid milk would seem advisable in certain cases of hypochlorhydria, and in certain cases of malnutrition and celiac disease. Its use is not advisable for any considerable period—from two to four weeks at most. Lactic acid milk may be fed an indefinite time.

Milk acidified by lemon juice as recommended by A. F. Hess (THE JOURNAL, May 17, 1924, p. 1604) should be mentioned. Such a milk has a lowered "buffer value" and may be fed an indefinite period. In addition, it supplies anti-scorbutic vitamin, which is deficient in cow's milk. The general use of lemons, with the ease of obtaining and safety, is advantageous.

The use of commercial lactic acid milk must be left to the discrimination of the physician. There are good products available today that offer the advantages of being well prepared, uniform in quality, and convenient for the mother to use. The cost is not prohibitive, but is a factor to consider in individual instances.

LEUKOCYTOSIS

To the Editor:—I would be pleased to know the most recent view of the production of leukocytosis in infection. Is it apt to be greater in eosinophilia? Holt states that it rises as high as 40,000 in roundworm infestation. I have questioned bacteriologists as to whether there is a relative or actual increase; their replies were almost invariably that the increase was actual, but they could not satisfactorily account for their belief aside from the fact that the figures did not lie. In the normal arterioles the white cells are lined along the intima and erythrocytes in the center of the current. The white cells occupy the wall side because of either chemotactic or complement influence. Now if by reason of infection the attraction is lessened, there will be more white cells released than normal when the blood is drawn into the capillary tube for the count, which would result in an apparent but not real increase. Where do the pus cells come from? I have seen it stated that one third of the feces is composed of bacteria. What are these and have any studies been made of their action on the economy?

THOMAS I. O'DRAIN, M.D., Philadelphia.

ANSWER.—Our correspondent raises the question whether the leukocytosis occurring in infections is real or only apparent, advancing the hypothesis, for which there is no proof, that white cells may be more readily released from the vessels and hence more drawn into the counting chamber in infectious than in normal conditions. There is no question that the total number of leukocytes in the circulating blood is increased in infections that exhibit a high leukocyte count, for if sections from different tissues and organs throughout the body are examined under the microscope in cases with a high leukocyte count it will be found that the blood in the vessels everywhere shows more leukocytes than the blood in corresponding tissues from persons who have died without the high leukocyte count. The pus cells are chiefly the leukocytes which have migrated from the blood vessels at a point of local suppuration. In conditions accompanied by leukocytosis there is apparently an increased release of leukocytes from the tissues that form them, especially the bone marrow, and also an increased actual formation of leukocytes.

The fecal bacteria are chiefly those that have grown in the alimentary canal and are of many sorts. Extensive studies have been made of these bacteria. See Kendall's Bacteriology, Lea and Febiger; also "The Intestinal Flora," by Rettger and Cheplin, Yale University Press.

BEFSAL

To the Editor:—Have you any data regarding the composition and therapeutic value of "Befsal"? It is marketed by the supposed inventor, Dr. S. Lewis Summers, Ambler, Pa., and rather extravagant claims are made for it.

S. E. A., M.D., Albany, N. Y.

ANSWER.—The absurd and ludicrous claims made for Befsal were discussed in THE JOURNAL, Feb. 21, 1925, p. 611. The claimed chemical composition of the product and the product itself both may be described as "crude."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. Colorado: Denver, Sept. 13. Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

ARIZONA: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

COLORADO: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

FLORIDA: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

IOWA: Des Moines, Oct. 12-14. Commissioner, Dept. of Health, Dr. Don M. Griswold, Des Moines.

KANSAS: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

OKLAHOMA: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

RHODE ISLAND: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

UTAH: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WISCONSIN: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

WYOMING: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

NEW ANATOMY BUILDING OF THE UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE

The University of Tennessee has adopted a building program for the construction of a group of buildings in Memphis that will be adequate to house the colleges of medicine and dentistry, the schools of pharmacy, public health, nursing and social welfare, and the department of extension health service. When completed, the buildings will form a quadrangle, which will be located on the block south of the present medical school site.

Anatomy building of the University of Tennessee College of Medicine.

The only building of the group at present completed is the six story anatomy building, which is 180 by 60 feet and, as shown in the illustration, is built in a modified Tudor-Gothic style, fireproof in construction and surfaced with brick with stone trimmings.

The building provides laboratory and lecture space for the instruction of students in gross and microscopic anatomy, physiology, pharmacology and chemistry. Physiology and pharmacology will occupy half of the first and all of the second floors. The department of chemistry will occupy the third and half of the fourth floors. The other half of the fourth floor will be occupied by the department of microscopic anatomy. Space for embalming and storing anatomic material occupies part of the first floor. The department of gross anatomy will occupy the entire fifth floor. The sixth floor is given over to the animal house.

The departments are provided with spacious students' laboratories, which are located at the ends of the building and so receive light from three directions. Each member of the staff also is provided with a private laboratory and office.

COLUMBIA-PRESBYTERIAN MEDICAL CENTER

WILLIAM DARRACH, M.D.
Dean, Columbia University College of Physicians and Surgeons
NEW YORK

Marked progress has been made in the construction of the new buildings for the Presbyterian Hospital and the College of Physicians and Surgeons. The land available for this project extends north and south from One Hundred and Sixty-Fifth Street to One Hundred and Sixty-Eighth Street and from Broadway on the east to a line 200 feet to the west of

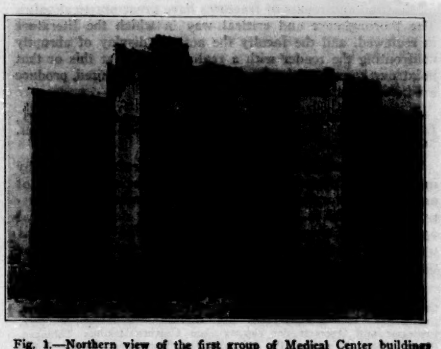
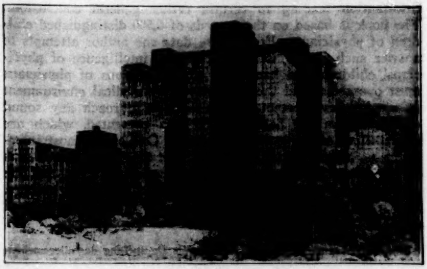


Fig. 1.—Northern view of the first group of Medical Center buildings from West One Hundred and Sixty-Eighth Street: College of Physicians and Surgeons (right), entrance and outpatient department (left) as it will appear fully expanded and with the School of Dentistry included.

Riverside Drive. This plot of ground consists of two portions, the larger and more easterly one being on a plateau about 180 feet above the river, and the smaller westerly one on a level with Riverside Drive. The upper portion is divided by Fort Washington Avenue into two unequal portions. The larger and more easterly is the old American League Baseball ground. The northerly two thirds of this plot is to be occupied by the Presbyterian Hospital and the Babies' Hospital, the School of Medicine and Vanderbilt Clinic, the southern third being reserved for future special hospitals. The northerly portion of the part lying to the west of Fort Washington Avenue will be occupied by the Neurological Institute. To the south of the latter is the Nurses' Residence overlooking the river. On the lower level the State Psychopathic Hospital and Institute is to be erected at the northerly portion east of Riverside Drive. The lower ten stories with wings projecting to the west provide wards and small rooms for psychopathic patients, with approximately 200 beds. The central portion rises as a tower above the upper plateau, where it will be in close proximity with the Neurological Institute. This tower will contain the library, laboratories and classrooms. The buildings for the Vanderbilt Clinic and the Medical School balance each other on either side of a central wing which will contain entrance hall, administrative offices, library and amphitheaters. The northerly wing of the medical school building contains the



Harkness Pavilion. Presbyterian Hospital. Babies' Hospital.

Fig. 2.—Southern view of the first group of Medical Center buildings from One Hundred and Sixty-Fifth Street.

major teaching laboratories for the various departments, the research rooms and other facilities, running on an east and west axis. At first only five floors of the Vanderbilt Clinic section are to be built. It is expected that later on this will be extended to the full height to give additional space to the clinic and to house clinical facilities for the school of dentistry.

The Presbyterian Hospital is built on an east and west axis with three ward wings projecting to the south. The private pavilion continues the main wings to the east, with a fourth wing projecting to the south. Seven stories of the latter have been erected but so planned as to allow an additional six stories when necessary. In the main hospital, in addition to the basement containing kitchens and other service facilities, there are two floors for permanent housing and ten ward floors. It is planned to use two of these floors for temporary housing. In addition to the floors devoted to medicine and surgery there will be one floor for the urologic clinic and two and one-half floors for the Sloane Hospital for Women.

The steel walls and floors have been completed for the hospital and the medical school, and excavation for the Presbyterian Hospital School of Nursing. Construction will soon commence for the erection of this building and also for that of Vanderbilt Clinic and the emergency and receiving portion of the hospital. Excavation for the State Psychopathic Hospital and Institute has commenced.

Arkansas May Examination

Dr. J. W. Walker, secretary of the Arkansas Board of Medical Examiners, reports the written examination held at Little Rock, May 11-12, 1926. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, all of whom passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
University of Arkansas Medical Department	(1926)	76.2, 77, 78.5, 80.4, 81.2, 81.7, 82, 82.3, 82.5, 82.8, 83.5, 84.2, 84.3, 84.8, 87.1, 92.9, 93.2
Columbia University College of Phys. and Surgs	(1923)	90.8
University of Nashville Medical Department	(1899)	78.7
University of Tennessee College of Medicine	(1926)	83.2, 84.6

Book Notices

MEDICAL HEREDITY. Distinguished Children of Physicians (United States, to 1910). By William Browning, Ph.B., M.D., Professor of Neurology, Long Island Medical College. With an introduction by Charles B. Davenport, B.S., A.M., Ph.D. Cloth. Price, $4. Pp. 250. Baltimore: The Norman, Remington Company, 1925.

In this volume the author has assembled much unusual information leading to certain rather general conclusions. The book is based on the records of 6,500 distinguished children of physicians. From these data the author attempts to answer such questions as concern the intelligence of physicians' children, the handicaps which the sons of physicians must overcome, and the part played by medical environment in mental development. It is difficult to reach any sound conclusion on the basis of the data presented, which are nevertheless of the greatest interest. One of the most interesting points presented is the fact that the distinguished sons of physicians are frequently painters and sculptors, and the distinguished daughters of physicians not unusually authors. It is a striking fact that 846 persons in "Who's Who," out of a total of some 16,000, are the children of physicians.

DIE CHIRURGIE: Eine zusammenfassende Darstellung der allegemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner und Prof. Dr. O. Nordmann. Lieferung 8. IV. Band. Die Chirurgie des Ohres. Von Prof. Dr. A. Blohmke. Paper. Price, 16 marks. Pp. 359-636, with 182 illustrations. Berlin: Urban & Schwarzenberg, 1926.

In this section, on diseases of the ear, Blohmke of Königsberg conformed to the style and general arrangement set by the writers of the previous portions. The anatomy and physiology of the ear are dealt with, as well as the pathology, semeiology and treatment of the diseases of the ear. This section is simply a part of a surgical system and not an entity. The author has therefore studiously avoided those subjects of general surgical interest not specifically related to the ear which have been allotted to other portions of this system. Judged either as part of a system or as an entity, the book may be highly recommended.

INDIVIDUAL GYMNASTICS. A Handbook of Corrective and Remedial Gymnastics. By Lillian Curtis Drew, Director of Department of Corrective Gymnastics, Central Branch Y. W. C. A., New York City. Third edition. Cloth. Price, $2.25. Pp. 276, with 121 illustrations. Philadelphia: Lea & Febiger, 1926.

This book emphasizes the individuality, psychology and responsibility of treatment. It contains a short discussion of the anatomy of the spine, skeleton, muscles and ligaments. A thorough consideration of posture is given. In the school hygiene of posture, adjustable seats and desks, the proper writing position, and correction of vision are discussed. The subject of home hygiene, including sleep, meals, food, clothing, teeth, outdoor life, elimination, baths and shoes, is well given. The examination and recording of posture methods are discussed, including the use of the schematograph and the silhouettograph. The grading of posture is described. Under treatment, special exercises are given, including breathing and rib expansion movements. Exercises to increase general and local flexibility are described in detail. There is an interesting chapter on visceroptosis and its treatment by gymnastic measures. The technic of examination of scoliotic patients includes the use of the pantograph, Freiberg's method, the schematograph and the photograph.

GASTRIC FUNCTION IN HEALTH AND DISEASE. By John A. Ryle, M.D., F.R.C.P., Assistant Physician and Lecturer on Medical Pathology, Guy's Hospital. Cloth. Price, $2.75. Pp. 152, with illustrations. New York: Oxford University Press, 1926.

This is a reprint in book form of the Goulstonian lectures on the study of gastric function in health and disease, which were delivered at the Royal College of Physicians in March, 1925. The lectures were published serially in the *Lancet* during March and April, 1925, and much of the experimental work had been previously described in *Guy's Hospital Reports*. The first section of the book deals with gastric function in health; the remaining two sections are devoted to gastric function in disease. Throughout the text clinical observations, laboratory tests and experimental physiologic studies are carefully considered in their relation to one another, affording clear, sound and well balanced discussions of very practical nature. The author is partial to the fractional method of analysis of gastric contents; he also emphasizes the importance of the time of the "dyspeptic reaction," immediate or delayed; he further stresses the relation of the "physiologic type" or "gastric habit" of the individual to the gastric function both in health and in disease, and finally develops the fact that whether we are dealing with clinical, radiologic or chemical symptoms and signs, each response expresses merely an exaggeration or depression of a normal reflex.

LES PROBLÈMES DE LA PHYSIOLOGIE NORMALE ET PATHOLOGIQUE DE L'OS. Par R. Leriche, Professeur de clinique chirurgicale à la Faculté de Strasbourg, et A. Policard, Professeur d'histologie à la Faculté de Lyon. Paper. Price, 28 francs. Pp. 229, with 29 illustrations. Paris: Masson et Cie, 1926.

Dedicated to Leopold Ollier, one of the pioneers of modern physiology of bone, this work deals with the evolution of bone in health and in disease. The authors have collaborated for many years, and the substance of their many joint journalistic articles relating to a great variety of interesting practical topics connected with bone is included in this book. For many years, too, we have been so accustomed to the keen pleasure afforded by the investigations of histologic structure by Policard that little surprise is excited from the excellence of the accounts here of the normal structure, evolution and significance of bone, of the physicochemical basis of ossification, and of the mechanism of resorption of bone. The chapters on the changes in transplanted bone, heterotopic ossification and repair of fractures have great practical value. The thoroughness and critical way in which the literature is reviewed, and the faculty the authors display of abruptly confronting the reader with a realization that at this or that point our knowledge is sharply and definitely limited, produce a wholesome stimulation.

THE TECHNIC OF ORAL RADIOGRAPHY. By Clarence O. Simpson, M.D., D.D.S., F.A.C.D. Cloth. Price, $5. Pp. 207, with 165 illustrations. St. Louis: The C. V. Mosby Company, 1926.

This is a satisfactory presentation of dental radiography in its various phases. It has the merit of being thorough, of ample explanatory detail, and yet not redundant. The illustrating material is of the best, and amply depicts practical applications of the explanatory material. For the student as well as the practitioner in dental roentgen-ray procedure, the work will prove highly instructive.

ALLGEMEINE UND SPEZIELLE CHIRURGIE DES KOPFES EINSCHLIESSLICH OPERATIONSLEHRE UNTER BESONDERER BERÜCKSICHTIGUNG DES GESICHTS, DER KIEFER UND DER MUNDÖHLE. Ein Lehrbuch. Von Eduard Borchers, Professor und Oberarzt der chirurgischen Universitätsklinik Tübingen. Paper. Price, 54 marks. Pp. 382, with 326 illustrations. Berlin: Julius Springer, 1926.

Here is an unusual monograph, as excellent as it is unusual. The first half is devoted to the diagnosis of congenital lesions, injuries, inflammatory conditions, and tumors of the tongue, lips, face, jaws, scalp and skull. In this section injuries to the maxillae, syphilis, and carcinoma constitute the major part. The second half is devoted to anesthesia, particularly local, and to plastic procedures, such as restoration of the nose, lip and jaws, and operations on tongue and palate. There are a number of excellent colored plates of a type rarely seen in American textbooks. The book is worthy of the efforts of a translator who is interested in this subject.

THE DISEASES OF CHILDREN. By the late Sir James Frederic Goodhart, M.D., LL.D., F.R.C.P. Edited by George Frederic Still, M.A., M.D., F.R.C.P., Professor of Diseases of Children, King's College, London. Twelfth edition. Cloth. Price, $8.50. Pp. 966, with 68 illustrations. Philadelphia Lea & Febiger, 1926.

The original manuscript, first issued in 1885, has passed through eleven editions, the last appearing in 1921. The book has been reedited with considerable revision by Goodhart's former pupil George Frederic Still. The preface carries the following notations by Still and describes fully the purpose of the work: "I have adhered to the intention of its author,

my revered teacher, that the aim of the book should be primarily clinical. Any attempt to cover the numerous advances in physiological and pathological chemistry; or even in chemical pathology, would have added inordinately to the bulk of the book, and, perhaps, have tended to obscure its purpose." As a result of its limited size, many subjects of necessity have been treated briefly. This work can be recommended as an addition of practical value to a general medical library. Such subjects as are considered in greater detail, to a large extent, express clinical studies as developed in English hospitals.

MODERN METHODS OF FEEDING IN INFANCY AND CHILDHOOD. By Donald Paterson, B.A., M.B., M.R.C.P., Physician for Diseases of Children, Westminster Hospital, and J. Forest Smith, M.R.C.P., First Assistant to the Clinical Unit, St. Thomas's Hospital. Cloth. Price, $3. Pp. 106. New York: Paul B. Hoeber, Inc., 1926.

This little manual is devoted to the essentials of feeding in infancy and childhood by modern methods. The problem is concisely stated, the directions are careful and accurate, and the volume should be accepted as an authentic guide to those who are interested in the feeding problems of infants and young children.

LEÇONS DE PATHOLOGIE DIGESTIVE. Par M. Loeper, Professeur agrégé à la Faculté de médecine de Paris. Sixth series. Paper. Price, 22 francs. Pp. 272, with 43 illustrations. Paris: Masson et Cie, 1925.

It is true especially of the diagnosis and treatment of diseases of the digestive organs that careful assembling of the results of examinations in a variety of fields greater than usual is necessary. The isolation and identification of bacteria, microscopic examination of stools and the stomach content, roentgen-ray and chemical examinations as well as tests utilizing methods and apparatus of pure physics are all employed. There is, moreover, great need for careful judgment in estimating the relative importance of the information obtained in these many ways. Editions of the five preceding volumes were quickly exhausted. Of especial interest among the eighteen lectures in the present volume are those concerned in the presence and significance of leukocytes in the gastric juice, demonstration of the secretory activity of the stomach in digesting capsules containing bismuth or other substances opaque to the roentgen ray, syphilis of the stomach, hemorrhages with cirrhosis of the liver, the lessened glycosuria when cirrhosis of the liver is accompanied by ascites, gastric neuritis, multiple generalized cutaneous carcinomas secondary to gastric cancer, and the relation between markedly reducing the cholesterol in the blood and diseases of the liver. The brevity and elegance of diction, and the abundant evidence of thoroughly scientific clinical studies commend this work. It is also refreshing to find "pathology" used in the title with its real significance, when on every hand its usage in the United States is so wrongly applied solely to morphologic alterations, as "the pathology present in this instance" and "there was no pathology of the liver."

THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS OF THE HIP. By G. R. Girdlestone, B.M., F.R.C.S., Hon. Surgeon, Wingfield Orthopaedic Hospital, Oxford. Cloth. Price, $2.50. Pp. 94, with 60 illustrations. New York: Oxford University Press, 1925.

This is an excellent presentation. The material is considered chiefly from a purely clinical point of view. There is an excellent chapter on the mechanics of the hip joint. The author presents what he terms a "comprehensive diagnosis of hip disease." His rules for examination of the patient are simple and complete. He emphasizes the diagnostic value of limitation of movement. He deplores the lack of a complement fixation test for tuberculosis. The technic of examination, early diagnosis and differential diagnosis is presented forcefully. Under treatment, heliotherapy splints and the Jones abduction frame are described. He discusses the position of choice in hip disease. Operation has no place in the treatment in children. Drainage may be necessary in the treatment of sepsis. He discusses arthrodesis and excision operations in adults. This small volume is the best monograph on the subject to date. It is easily read, and the illustrations are excellent. It is recommended to every student, general practitioner and orthopedic surgeon.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

HANDBUCH DER SOZIALEN HYGIENE UND GESUNDHEITSFÜRSORGE. Herausgegeben von A. Gottstein, A. Schlossmann und L. Teleky. Zweiter Band: Gewerbehygiene und Gewerbekrankheiten. Dritter Band: Wohlfahrtspflege—Tuberkulose-Alkohol—Geschlechtskrankheiten. Paper. Price, 54 marks each. Pp. 1-816 and 1-794, with illustrations. Berlin: Julius Springer, 1926.

Tremendous consideration of public health activities and medical relations.

DIE NARKOSE IN IHRER BEDEUTUNG FÜR DIE ALLGEMEINE PHYSIOLOGIE. Von Hans Winterstein, Professor der Physiologie und Direktor des physiologischen Instituts der Universität Rostock. Zweiter Band—Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere. Herausgegeben von M. Gildemeister, et al. Second edition. Paper. Price, 28.50 marks. Pp. 474, with 8 illustrations. Berlin: Julius Springer, 1926.

The physiology of narcosis.

AN ATLAS OF HUMAN ANATOMY. For Students and Physicians. By Carl Toldt, M.D. Assisted by Professor Alois Dalla Rosa, M.D. Adapted to English and American and International Terminology by N. Eden Paul, M.D., M.R.C.S., L.R.C.P. Volume 1, first section—A. The Regions of the Human Body; B. Osteology. Volume 2, fourth section—E. Splanchonology. Revised edition. Cloth. Price, $10 per set. Pp. 985, with 1505 illustrations. New York: The Macmillan Company, 1926.

New edition of standard atlas.

KREBSENTSTEHUNG UND ENDOKRINES SYSTEM. Von Dr. Hans Elsner, Facharzt für Magen- und Darmkrankheiten in Berlin. Paper. Price, 5.40 marks. Pp. 100. Berlin: S. Karger, 1926.

A monograph recounting the author's clinical and experimental observations which he believes indicate that cancer is an endogenous disease, dependent on constitutional alterations for which the endocrine system is responsible.

UNTERSUCHUNGEN ZUR AETIOLOGIE UND THERAPIE DES KARZINOMS. Von Joseph Schumacher. Paper. Price, 7.20 marks. Pp. 145, with 5 illustrations. Berlin: S. Karger, 1926.

A monograph describing investigations of cancer by a new method for demonstration of lipoids in tissues, which reveals certain structures believed by the author to be of significance in the etiology of cancer.

BRAINS OF RATS AND MEN. A Survey of the Origin and Biological Significance of the Cerebral Cortex. By C. Judson Herrick, Professor of Neurology, The University of Chicago. Cloth. Price, $4. Pp. 382, with 53 illustrations. Chicago: University of Chicago Press, 1926.

Combined biologic and philosophical presentation of our knowledge of the brain.

NEUERE ERGEBNISSE DER PHYSIOLOGIE: In 22 Vorlesungen für Aerzte, Biologen und ältere Studierende. (Eine Ergänzung zu den Lehrbüchern der Physiologie). Von Dr. Phil. et Med. Ernst Gellhorn, a. o. Professor der Physiologie an der Universität Halle, A. S. Paper. Price, 30 marks. Pp. 446, with 113 illustrations. Leipsic: F. C. W. Vogel, 1926.

The newer physiology supplemented to current textbooks.

HEALTH COMPENDIUM AND HEALTH PUBLICITY. By T. Crew, F.F.I., F.I.H., Clerk to Leicestershire Insurance Committee. Foreword by Prof. A. Bostock Hill, M.D., M.Sc., D.P.H., Chairman of the Health Week Committee of the Royal Sanitary Institute. Cloth. Pp. 260, with illustrations. Leicester: Reader Printing Company, Ltd., 1926.

Guide to public health organizations.

MEDICINA FENNICA, ANNO MCMXXV. Edidit Societas Medicorum Fennica Duodecim. Redigenda Curavit Gösta Becker. Paper. Pp. 176, with illustrations. Helsingfors, 1926.

A summary of medical contributions from Finland in English abstract form.

MEDICAL REPORT OF THE HAMILTON RICE SEVENTH EXPEDITION TO THE AMAZON, IN CONJUNCTION WITH THE DEPARTMENT OF TROPICAL MEDICINE OF HARVARD UNIVERSITY, 1924-1925. Contributions from the Harvard Institute for Tropical Biology and Medicine, No. IV. Cloth. Pp. 313, with illustrations. Cambridge: Harvard University Press, 1926.

DYSTROPHIEN UND DURCHFALLSKRANKHEITEN IM SÄUGLINGSALTER: Ihre Beurteilung und Behandlung mit einfachen Methoden. Wegweiser für den praktischen Arzt. Von Dr. Leo Langstein, Präsident des Kaiserin-Auguste-Victoria-Hauses. Paper. Price, 14 marks. Pp. 207, with 149 illustrations. Leipsic: Georg Thieme, 1926.

Miscellany

MEDICAL PERIODICALS FROM THE LIBRARY STANDPOINT*

CHARLES FRANKENBERGER
Librarian, Medical Society of the County of Kings
BROOKLYN

Medical periodicals comprise probably two thirds of the collections of the larger libraries, in which it is the rule to keep a complete file of all medical literature obtainable.

Because of the attention they require from their receipt as individual numbers until their preparation for binding as complete volumes and placed on shelves as parts of sets for permanent reference, many of the variations and shortcomings in their form and make-up are impressed on us as library workers. These variations are discovered by us in the arrangement of the numbers that go to form volumes and in the collating of the page numbering preparatory to binding; also, after having been bound, by readers looking up references quoted in bibliographies and indexes.

COLLATING

We collate the paging of each unbound volume before binding and again on its return from the binder in bound form. This is absolutely necessary before binding to ascertain whether paging is complete. It affords opportunity to make note of any supplements or other text matter paged separately, or discrepancies or errors in pagination, so that the binder can be given instructions as to the order in which this separately paged material is to be bound in the volume. We all have frequently found instances in which a signature has been duplicated and one omitted. For this reason, the ideal method is to collate all publications, current numbers of periodicals as well as new books, at the time of their receipt. Some libraries do collate their new books as received. We do not know of any that collate the current periodicals as they arrive. While this is desirable, it would mean collating periodicals three times: on their receipt, on preparing complete volumes for binding in case any pages have been cut during course of completion of volume, and again on return from the binder to check whether all pages have been included and properly arranged. The staffs of most of our libraries will not permit of this ideal check up.

To many editors and publishers, the points that I am about to stress are considered unimportant and nonessential. Others probably have not given much thought to these irregularities in form in their publications, and still others whose periodicals are of the local, current or ephemeral class would not consider our suggestions necessary in their case.

While the larger portion of the copies circulated are discarded after having been read by those receiving them, there will always be those sets which are retained for permanent reference in private collections as well as those in the larger, all inclusive medical libraries. The fact that a medical journal existed, whether only one issue, or a few or a series of volumes regardless of its ephemeral or future value, means that it forms a part of medical literature and must be preserved in our all inclusive medical collections, as a record of the printed page of the science of medicine.

In order to illustrate the points to which I am drawing attention, I cite the names of various periodicals. These are used only as representative of the larger group in which similar variations exist, as it is not my purpose to discriminate against any particular publication.

* Read before the Medical Library Association, Ann Arbor, Mich., June 9, 1926.

TITLES OF PERIODICALS

The title should be short. *Physical Therapeutics* is the new and welcome change in title of the *American Journal of Electrotherapeutics and Radiology*. In contrast to this two word title might be mentioned the *Archives des maladies de l'appareil digestif et des maladies de la nutrition* and *Berichte über die gesamte Gynäkologie und Geburtshilfe sowie deren Grenzgebiete*. The outstanding advantages of short titles are that they occupy less space and type, thus reducing cost of composition in the numerous bibliographies and indexes in which they are listed, and also in the amount of lettering on the back of bound volumes, reducing cost of binding.

CHANGE OF TITLE

When a change in title is contemplated it should not be made in a volume in the course of publication, but at the beginning of a new volume. In volume 26, the title of the *Pennsylvania Medical Journal* was changed with number 7 to the *Atlantic Medical Journal*. Thus, half the volume was one title and the other half another, making it impossible, bound as one volume, to place it in its alphabetical order on the shelves.

NUMBERING OF SERIES, VOLUME, NUMBER AND DATE OF ISSUE

Each issue should have printed on its front cover and on the first page of text matter the volume, number in volume of that issue, month, day of month if more frequently issued, and year, so that when the volume is bound the beginning of each number can be easily distinguished.

Each volume should begin numbering its first issue with number 1. If a serial number is used, as is the case with the *British Journal of Surgery*, it should be in addition to the individual numbering of the issues of each volume. This makes it easy to recognize the beginning of each new volume.

It is preferable that volumes begin and end in the calendar year. This reduces the lettering on the back of each volume, at the time of binding, from two years (1925-1926) to that of one year, and the double year quotation in bibliographies and indexes. It also makes it more convenient in recording on current periodical record cards and check lists of sets.

Arabic Versus Roman Numbers.—Roman numerals in bibliographies, indexes and reference work should be discontinued, and they should be replaced by Arabic numbers. The fact that Roman numerals are no longer taught in our schools, the slowness with which they are interpreted, and the additional space, type and increased cost of composition in printing are sufficient reasons to warrant this change. This difference is at once apparent if we contrast quoting volume LXXXVIII in Roman numbers, requiring eight figures, in comparison with two in Arabic numerals.

Series Numbering.—The term "series" has been rather indiscriminately used, much to the annoyance of the bibliographer and library worker. For example, the *Edinburgh Medical Journal* completed its first series in 1896, and in 1897 began with volume 1 of a "new series," which ran through twenty-three volumes. In 1908 it began another new series, commencing with volume 1. This should have been indicated as third series, which it properly is. If a request is made, or a quotation is given, without the year, of new series, volume 19, it is not known whether it is volume 19 of the new (or second) series or volume 19 of the new (or third) series that is wanted. In the case of the *Irish Journal of Medical Science*, each year's issues form a new series numerically.

Page Numbering.—It is in this particular phase of periodical publication that we have one of our greatest grievances. In the twelve numbers forming the annual volume of the

Proceedings of the Royal Society of Medicine, there are twenty-five separate sets of paging.

In quite a number of journals, especially among the foreign publications, we find this unfortunate method of having several sets of paging in the same volume. In the *British Medical Journal*, three separate sets of paging are issued: the regular journal matter, "supplement" devoted to association and society items, and "Epitome to Current Medical Literature." The text matter of the *Presse médicale* is divided into three separate divisions of page numbering: original articles, etc., "supplement" (containing miscellaneous items), "revue des journaux." The *Paris médical* forms four volumes annually. Each half year is divided into two volumes, one entitled "partie médicale," which is paged in Arabic numerals in the center of the top of each page, and the other volume, entitled "partie paramédicale," paged in Roman numerals in the center of the top and in Arabic figures in bold face type in the center of the bottom of each page.

The *Medicina Ibera*, published as one volume annually, is divided into two parts, each having two separate sets of paging, one in Arabic and the other in Roman numerals. Then there is the *Norsk Magazin for Lægevidenskaben*, with its various subdivisions with separate paging, and many others that might be mentioned. In a number of French periodicals it is the custom to issue, with separate paging, "fiches bibliographiques" and "bulletin bibliographique," containing bibliographic references to medical literature, which should be bound in with the other part of the journal.

A very bad form is that followed in the *Wiener klinische Wochenschrift*, a folio size periodical, which publishes in each issue a supplement (Sonderbeilage) in octavo size, which should be incorporated in the bound volume as it is listed in the yearly index.

Supplements.—In addition to the types of separate paging just mentioned, there are those journals which issue as supplements, paged separately, special monographs comprising some exhaustive study, such as those published in connection with the various Scandinavian "Acta" periodicals.

Text Matter Among Advertising Pages.—A considerable number of journals continue their reading matter over into the advertising pages in the back. While this may be good form from a commercial standpoint, it is not approved from a book-making standpoint. For instance, in the *Medical Times* (New York) the text matter is continued from the Arabic page numbering on to the back of the advertising pages, which follow the regular reading matter. The *Modern Hospital* is another example of the same condition. To cite a concrete illustration from this journal, the regular paging of the January, 1926, issue ends with page 102, but the reading matter continues on advertising pages 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98 and 100. The text matter of the February issue begins with page 103. Practically all bookbinders in binding the volume would assemble the pages so that page 103 would immediately follow page 102, and unless instructed to bind in either all advertising pages or at least those containing reading matter, would discard the fifteen advertising pages of the January issue, containing reading matter that is a continuation of the text proper.

Thus, the concluding portion of the article continued from page 102 to the advertising page, as well as all the reading matter on the other fourteen advertising pages, would be excluded and the volume stand on the shelves incomplete. This has no doubt been the case in many libraries in which the advertising pages have not been bound in the volume. In binding, in order that the reading matter may continue consecutively, it is necessary to bind in between pages 102 and 103 the intervening fifteen advertising pages containing the reading matter carried over from the regular text matter.

The method followed in the *Nation's Health* is recommended for adoption on the part of all periodicals that carry text matter over into their advertising pages. In this publication the reading matter carried into the advertising section continues at the top of the advertising pages on which the reading matter appears the regular page numbering of the text portion proper, and at the bottom of the same page the consecutive page numbering of the advertising section. On the opposite side of the advertising page containing this reading matter, which is entirely advertising matter, only the running page numbering of the advertising section is printed, so that in the binding of a volume so page numbered, no reading matter will be eliminated by the bookbinder.

Then, again, there is a group of periodicals in which the text and advertising pages are paged consecutively, as in *California and Western Medicine*. While this makes a bulky volume, it does insure completeness on binding. In some periodicals, as the *Monthly Labor Review*, each issue is paged separately. This is not very convenient for indexing by the volume or for quoting in bibliographic references.

The ideal from a bookmaking as well as from a library standpoint is one set of page numbering of all text matter comprising a volume.

From the standpoint of the reader who wishes to refer to the bound or completed volumes, there is much confusion resulting from the numerous separate sets of paging and indexes that go to form one volume of the classes of publications that have just been referred to. The two groups, those with several sets of paging and supplements, and those whose advertising pages contain reading matter, also enter into the economic side of library administration—the care and time required by the library staff in collating these publications for binding, and the added cost of binding for the time and care consumed in assembling these separate sets of paging at the bindery. Some bookbinders do not care to do work of this responsible type and insist on the library taking these publications apart and arranging the volume as it wishes it bound. Careless and indifferent binders would simply bind the issues as sent to them.

RUNNING TITLES AT TOPS OF PAGES

Various forms are now in use in printing the running heads of either articles or titles of periodicals or both at the tops of the pages. This particular procedure in the printed make-up of periodicals is desirable, as it facilitates the finding of articles when the numbers or volumes are consulted. Uniformity in the arrangement of running titles would be of further assistance. An excellent form is that of the monthly publications of the American Medical Association. The running title of the periodical is printed at the top of the left hand page, and the running head of the articles, with the last name of the author, at the top of the right hand page on the same line with the page number; for example:

Left hand running title:

228 *ARCHIVES OF INTERNAL MEDICINE*

Right hand running title:

KOHN—MERCURIC CHLORIDE POISONING 229

TITLE PAGE AND INDEX

No volume published in numbers or parts forms a complete book, from the book-making standpoint, without a title page and index. The dignity, appearance and future serviceableness of many periodicals are greatly depreciated because they fail to provide a proper title page and index to give completeness to their publications. The title page, in addition to the title and other matter, should indicate the volume number and the year or years that it covers. If only a "con-

tents" for the volume is published, it should be numbered in Roman paging and bound in the front of the volume following the title page. When both a "contents" and index are published, the contents should be paged and bound as already stated, and the index, which should preferably be arranged in one alphabetical list of both authors and subjects, should continue the Arabic page numbering immediately following the text matter.

Some journals make the mistake, when printing their title page, of numbering it in with the running page numbering in the issue in which it appears. When it is removed by the binder to be placed in its proper place in the front of the volume it makes a break in the page numbering, giving the impression that something is missing and the book imperfect. In other instances, the title page and index have been published in a number of the succeeding volume and included in the page numbering of the later volume. On removal for binding in the volume in which it belongs, it makes a break in the paging, which again gives the impression of incompleteness. For example, in the *Journal of the National Medical Association*, pages 61-62 of number 1 of volume 18, 1926, form the index of volume 17, 1925.

In still other cases the error is made of printing a title page on the back of a page of text matter, which makes the title page practically useless, as it is preferable for it to remain with the text matter in its place according to the page numbering it bears. An illustration of this is page 668 of the December, 1925, issue of the *Medical Review of Reviews*.

CHANGE IN MANNER OF PUBLICATION

Suspension and Discontinuance of Publication.—Journals have ceased publication without publishing an announcement in their columns or giving other notice of the fact. When such information is not published, those who preserve and bind their copies, especially libraries, are in doubt as to whether they have the last number issued and whether their sets are complete. Often, because of uncertainty and lack of this knowledge, volumes are retained unbound on the shelves. Our last issue of the *Gulf States Journal of Medicine and Surgery* is number 5 of volume 17, November, 1910. We know that this journal was incorporated with the *Southern Medical Journal*, which began with volume 1, number 1, January, 1911, but we do not know whether a number 6 for December, 1910, was issued of volume 17, and we have not been able to obtain this definite information by mail.

Merging and Consolidating with Other Journals.—The same condition occurs in connection with journals that combine with other publications. They fail to state definitely the last number issued of the publication that is merging into another, and the periodical with which it consolidates likewise neglects to mention this fact. For example, the latest issue of the *Nashville Journal of Medicine and Surgery* that we have, and we believe it to be the last published, is number 3 of volume 114, March, 1920. There is no notice in this number indicating that it intended suspension or consolidation. *Medical Life* on the cover of its November, 1920, issue announced that it had acquired the *Nashville Journal of Medicine and Surgery*. This gap between March and November, 1920, presents the problem as to whether or not our set is complete as it is, or whether other numbers were published subsequently to March, 1920.

Journals ceasing publication or merging into other periodicals should give definite notice indicating the issue with which the cessation or consolidation becomes effective.

JOURNALS WITH VARIOUS SUBDIVISIONS

Especially with the German publications does the bad practice prevail of changing the title of an individual journal and subdividing it into parts under other titles. For instance, the *Zeitschrift für die gesamte Anatomie* is divided into three parts: Abteilung I under the title *Zeitschrift für Anatomie und Entwicklungsgeschichte;* Abteilung II, entitled *Zeitschrift für Konstitutionslehre*, and Abteilung III, *Ergebnisse der Anatomie und Entwicklungsgeschichte*. Another illustration is that of the *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten*. This is published in two parts: Abteilung I, which covers *Medizinische-hygienische Bakteriologie und tierische Parasitenkunde*, subdivided into two parts, "Originale" and "Referate," and Abteilung II, which covers *Allgemeine landwirthschaftlich-technologische Bakteriologie, Gärungsphysiologie, Pflanzenpathologie und Pflanzenschultz*.

This method of expanding a single periodical into several subdivisions is very confusing from a bibliographic standpoint, and is strongly disapproved by library administrators.

For practicability, convenience of arrangement, quotation, listing and binding, each periodical publication should be a unit in itself, under its own title, with its individual volume and issue numbering.

STANDARDIZATION IN SIZE

The ideal size would be one that would permit journals, when bound, to be accommodated on octavo size shelves. With the *Denver Medical Bulletin*, issued a trifle larger than a postal card, the size of medical periodicals varies to that of *La Voz Medica* of Madrid, which appears in newspaper form (18 by 24 inches). This variation in size makes it impossible for libraries to file the current issues and to arrange the bound volumes on the shelves in one alphabetical arrangement.

CONCLUSION

This presentation will not have been in vain if, through its publicity, it comes to the notice of those who can overcome the variations mentioned and bring about greater uniformity and standardization in medical periodical publications.

1313 Bedford Avenue.

Medicolegal

Action for Illness from Seeing Cockroaches in Pie

(Carroll v. New York Pie Baking Co. (N. Y.), 213 N. Y. Supp. 553)

The Supreme Court of New York, appellate division, second department, in affirming an order and determination of the appellate term affirming a judgment for the plaintiff, does not state the amount of the judgment, but says that the facts, briefly stated, were that, while the plaintiff was eating a piece of pie cut from a pie made by the defendant, she discovered that several cockroaches were embedded in the bottom crust of the pie. They were crushed to such an extent that they were said to have resembled butterflies. The cockroaches were large. Two were about an inch in length, and one was about half an inch long. The plaintiff became ill, and this action was brought to recover the damages occasioned by that illness. The case was properly submitted to the jury. The plaintiff claimed a physical injury. Her claim was that the defendant negligently furnished her an article of food in such a repulsive condition that it nauseated her and made her ill. If she had eaten the foreign substance contained in the pie, and had then become ill, there could be no question but that she would have been entitled to recover damages. The court may, it thinks, with equal certainty go a step further. If the article of food, when cut, had emitted an offensive odor, which nauseated the plaintiff, her right to recover in this action would have been clear. Could her cause of action be any less clear because the repulsive character of the food was comprehended by sight, rather than by taste or smell? In that connection the court may also consider that the dissemination of disagreeable odors has, in numerous instances, been held to constitute a

nuisance. That nuisances arising from disagreeable sights are not equally common is, the court thinks, because disagreeable sights can be readily screened from view, but disagreeable odors cannot be easily controlled. The plaintiff made no claim that she was frightened. There is nothing about a cockroach, or several cockroaches, that would cause fright, especially when dead and crushed to such an extent that they resemble butterflies. The plaintiff's illness was not caused by fright, but resulted from the repulsive and nauseating character of the food sold by the defendant. Under these circumstances the jury was required to determine whether the illness of the plaintiff was the natural and proximate result of the defendant's negligence. In this connection this court adopts, as stating the proper rule, that

> The general rule in torts applied to such actions as those of negligence is that the wrongdoer is responsible for the natural and proximate consequences of his conduct, and what are such consequences must be generally left for the determination of the jury. The essential requirements in such cases are that the damages shall be directly traceable to the wrongful act, and not the consequence of some intervening outside cause, and that they shall be the natural result thereof.

Within this rule, the verdict in this case seems to be well sustained by the facts.

Buying False Certificates of Preliminary Education

(State v. Adcox (Mo.), 278 S. W. R. 990)

The Supreme Court of Missouri, division 2, in reversing a judgment of conviction of the defendant of bribing a public official, says that the defendant, who was interested in procuring licenses from the state board of health for persons desiring to practice medicine and surgery, had an arrangement with a county superintendent of schools whereby the latter was to sign and swear to certificates showing the extent of preliminary education acquired by persons to be named by the defendant. The defendant made out the certificates and sent them to the superintendent, who swore to them and returned them to the defendant, the defendant paying him $5 each for them. The state's case was made out entirely on the evidence of the superintendent, who testified that his certificate which was the subject of the bribery charged against the defendant was false in every respect. But it was not within the official duty of the superintendent to issue a certificate, such as the one involved in this case, or any other of like character.

Under section 7332 of the revised statutes of Missouri of 1919, in the chapter relating to medicine, surgery, etc., a person desiring to practice medicine, in presenting his application to the board of health, was required to furnish a "certificate from the county school commissioner certifying that he has satisfactorily passed an examination equivalent to a grade from an accredited high school." When that law was in force, it may be said, it was sufficient to impose on the county superintendent of schools the duty of issuing certificates, such as the one under consideration here. That statute, however, was repealed and reenacted in 1921, and again in 1923, leaving out any language which could be applied to a county superintendent of schools. The act of 1923 was not in force when the alleged offense was committed, and the act of 1921 applied. As the section reads, an applicant for license to practice medicine is required to furnish satisfactory evidence of his preliminary qualifications, to wit, "a certificate of graduation from an accredited high school," etc. The certificate in this case was not a certificate of graduation. The act which the superintendent purported to perform was not within the compass of any official duty of any officer. The defendant paid for a scrap of paper which, if it had told the truth, was worthless for any purpose.

The board of health, under section 7332, acts of 1921, p. 472, had no authority to accept the certificate made by the superintendent. Only a "certificate of graduate from an accredited high school or its equivalent (the equivalent of the school), or state normal school, college, university or academy," would meet the requirements of the law. Such proof of graduation would naturally have to be certified by the person or persons authorized to do it; that necessarily would be teachers who furnished the instruction, or those in charge of the records of grades in such schools. Doubtless the board of health takes advice in such matters, and there was no evidence that the person named in the certificate in question ever presented his certificate to the board.

Doubtless the superintendent was guilty of making a false affidavit under section 3130 of the revised statutes of 1919. In that case his act was unofficial, a misdemeanor, and not the subject of bribery under any statute. If the defendant used the paper which he paid the superintendent to swear to, in order to perpetrate a fraud on the state board of health, that was another and different offense, which did not appear in the record here.

Sufficient Evidence that Injury Caused Death

(Smith v. Primrose Tapestry Co. (Pa.), 131 Atl. R. 703)

The Supreme Court of Pennsylvania, in affirming a judgment sustaining an award under the workmen's compensation act in favor of a widow for the death of her husband, says that on Dec. 9, 1921, while the man was engaged in unloading a box from a truck, the box slipped and fell against him. The only external mark produced was a bruise on the side. On the same day he was placed in the care of his family physician. Though previously in good health, he became progressively worse, his death occurring, Oct. 30, 1923. The existence of a sarcoma, at a point below the bruise first noticed, was discovered when a necropsy was had. Compensation is payable where death occurs within 300 weeks of the time of the accident, provided the testimony shows it was caused by the injury, or, by reason thereof, an incipient condition was hastened to development, ending in the loss. More must appear than a mere possibility of some causal connection, and if such facts as lead to this conclusion are not disclosed, an affirmative finding of the referee to this effect cannot be sustained. To meet the burden in the present case it was proved that the man had been in good health prior to the accident, and that injury resulted therefrom, making necessary immediate medical attention, which was continued regularly until the time of his death. No other intervening cause for the sudden breakdown appeared—a matter which was to be considered. The physician who was in charge of the patient for the whole time until death, except during August and September, 1923, testified that, from his observation of the case, he believed that the cancer, as a result of which death ensued, arose from the injury. Of all persons, he was best qualified to give a professional opinion. The evidence showed sufficiently his competence to express a judgment, and his reasons for the conclusion asserted were fully explained. His statement showed that the death not only possibly resulted from the injury, but that it was actually caused by it. This was sufficient, and fully justified the finding of the referee in regard thereto, which was that as a fact there was a causal connection between the injury and the death.

Identification of Roentgenograms—Physicians' Bills

(Wicks v. Cuneo-Henneberry Co. (Ill.), 150 N. E. R. 276)

The Supreme Court of Illinois, in affirming a judgment in favor of the plaintiff in this action to recover for personal injuries, says that during the examination of a physician the plaintiff offered in evidence two roentgenograms. When the first one was offered there was an objection that it was not properly identified. The physician had testified that he was present when the exposure was made, and that he waited while the plate was taken into the dark room and developed; that he examined the plate and was positive that it was the roentgenogram taken of the hand of the plaintiff. It was sufficiently identified, and the objection was properly overruled. But the objection made when the second roentgenogram was offered in evidence should have been sustained, the objection being that a proper foundation had not been laid for its admission, for the reason that the witness did not develop the plate nor did he see it developed, nor could he testify that it was an accurate portrayal of the condition of the bones of the hand. The error in admitting this roentgeno-

gram, however, was not prejudicial, for the reason that the physician testified that the condition shown by this roentgenogram was the same as that shown by the other. Furthermore, the physician testified fully concerning the condition of the injured hand, and there was no contention on the trial that the condition described by him did not exist nor that the roentgenograms showed a condition different from that described by him.

An instruction given on behalf of the plaintiff regarding the measure of damages included, among the elements, "her reasonable physicians' bills, necessarily incurred, if any." A physician who treated the plaintiff two or three times a week during the first month after the accident, and occasionally thereafter, testified that he made a charge for his services, and that he had been paid; but he did not give the amount of his charge, nor was there any proof that it was a usual and customary charge. Another physician testified that he saw the plaintiff on three occasions; that on the third occasion he made an examination of the hand with and without the use of the roentgen ray; that he was paid $3 for the first visit; and that he had not been paid for the other visits, but expected to be. The defendant asked the court to instruct the jury that no recovery be allowed for medical and surgical treatment for the reason that there was no evidence of a specific amount which the plaintiff had paid or had become liable to pay, and because there was no evidence that the amounts paid or charged were the usual and reasonable charges for services of that nature. This instruction was refused, and the court does not agree with the contention that there was error. The law is settled in Illinois that, in order to recover for medical and surgical services, it is necessary that two things be proved: first, that the claimant has paid or become liable to pay a specific amount; and, second, that the charges made were reasonable charges for services of that nature. Here the plaintiff showed that one of the physicians had charged and was paid by the plaintiff $3 for his services. The payment of the bill of a physician is prima facie evidence that it is reasonable. The payment of the bill being sufficient to make a prima facie case that the charge of $3 was in fact reasonable, it was proper for the jury to consider this item as an element of damages. The given instruction stated that physicians' bills should be allowed, "if any" were proved, and it must be assumed that the jury did not consider items not proved.

Validity of University's Requirement of Vaccination

(Wallace v. Regents of University of California et al. (Calif.), 242 Pac. R. 892)

The District Court of Appeal of California, first district, division 1, in denying the petitioner a writ of mandate to compel the regents of the university and the university to enter him as a student in the university, says that his application to be entered as such student had been denied because he refused to submit to vaccination against smallpox, or offer proof of previous vaccination. The respondents admitted that every person in attendance as a student at the university was, by a rule or regulation adopted by the regents, required to furnish satisfactory evidence that he had been successfully vaccinated against smallpox within seven years prior to his application for admission. The sole question thus presented was whether or not the regulation of the university was one which it had power to enact.

In 1921 the state legislature repealed the only act then in effect dealing with the subject of vacination, and enacted a law providing that "the control of smallpox shall be under the direction of the state board of health, and no rule or regulation on the subject of vaccination shall be adopted by school or local health authorities." The respondents contended that the word "school," as employed in the statute, was not used in its generic sense, but, rather, was limited to institutions of lesser academic requirements than colleges or universities. They contended, too, that the phrase "local health authorities" had also a limited meaning, and referred to subordinate health boards and health districts of the state. A further contention was that, even assuming that the regents of the university might be said to come within the prohibition of the statute, the statute, so far as the respondents were concerned, was unconstitutional and void. The court is of the opinion that they were correct in this last contention, and it need not decide on the construction of the terms mentioned.

The board of regents of the university had, at the time the rule in question was promulgated, power to adopt and enforce regulations concerning health measures and to require vaccination as a prerequisite to the admission of a student to the university, as at that time there was an absence of legislation lawfully limiting the exercise of that power. But there was no question but that the legislature might under its police power limit or abrogate that right. In fact, the respondents conceded that the power vested under the state constitution in the regents was not so broad as to destroy or limit the general power of the legislature to enact laws for the general welfare of the public, including laws regulating the subject of vaccination, even though it might incidentally affect the University of California, as such a law would be paramount as against a rule of the regents in conflict therewith. However, the legislative declaration that no rule or regulation should be adopted by school or local health authorities was not a regulation, nor, in fact, was it a health law.

So far as the act might be considered as a prohibition or limitation on the constitutional power of the university to pass health laws, it was clearly void. The legislature could not, by this character of a general law, take away or impair the power so granted. In order to accomplish this result it must itself regulate the subject by appropriate legislation. A general law which does not itself regulate, but which merely provides, as here, that there shall be no local regulation, can have no proper application to local bodies deriving their powers under a constitutional grant.

Hearing denied by the Supreme Court of California.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Sept. 13-18. Dr. Luther C. Peter, N. E. Cor. Chestnut and 20th Streets, Philadelphia, Secretary.

American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.

American Electrotherapeutic Association, Atlantic City, Sept. 8-11. Dr. Richard Kovacs, 223 E. 68th Street, New York City, Secretary.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Sandpoint, Sept. 2-5. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.

Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.

Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter P. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 5-9. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in North America for a period of three days. Foreign journals prior to 1921 and domestic journals prior to 1923 are not available. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Albany, N. Y.

16: 557-668 (June) 1926

*Insecurity of Tenure Obstacle to Public Health Administration. S. J. Crumbine, New York.—p. 557.
Record Forms in Syracuse Health Demonstration. G. C. Ruhland and I. F. Thompson, Syracuse, N. Y.—p. 567.
*Administrative Control of Measles. E. S. Godfrey, Jr., Albany, N. Y. —p. 571.
Anaerobes in Sewage. F. E. Greer, Chicago.—p. 577.
Immediate Opportunities in Child Health Conservation. D. B. Armstrong, New York.—p. 579.
Examination of Child Before Entering School. E. S. Stadtmuller, San Francisco.—p. 586.
Studies on Lactose Fermenting Bacteria. F. Berry, Columbus, Ohio. —p. 590.
*B. Coli in Market Oysters. F. O. Tonney and J. L. White, Chicago. —p. 597.
Preparation of Health Department Bulletins. I. V. Hiscock, New Haven, Conn.—p. 602.
Cancer Mortality. H. W. Green, Cleveland.—p. 605.
Rudyard Kipling on Public Health. L. J. Bragman, Syracuse, N. Y. —p. 609.
Selling Public Health. R. G. Beachley, Spartanburg, S. C.—p. 616.

Obstacles to Public Health Administration.—Two major handicaps, in Crumbine's opinion, are operating against a successful career in public health: (*a*) lack of a technical training in public health administration, and (*b*) insecurity of tenure of office. It is believed that insecurity of tenure and a low general average of salaries paid health officers are the chief reasons why so few capable young men are interested in a public health career. Two suggestions are offered as remedies for insecurity of tenure: (*a*) that health officers make conscientious and courageous use of the appraisal form to list their cities' health assets and liabilities; and, (*b*) that industrial and life insurance companies consider the fire insurance plan of city and personal credits and classification for adoption in industrial and life insurance. Security of tenure and freedom from unjust political interference, as assured to chiefs of fire departments under the fire insurance rating plan, should, under the industrial and life insurance plan, provide for similar guarantees for the health officer.

Administrative Control of Measles.—The plan proposed by Godfrey contemplates preparedness in advance of the outbreak so that, while things are done expeditiously, they are done in an orderly fashion. The one essential is never to forget, or allow the parents of young children in particular to forget, that measles under 3 is a dangerous disease. A second essential is to make them understand that measles is dangerous to sickly and delicate children; that under 3 is the danger period and the further under that age, the greater the danger, and that any person, especially an adult who contracts measles, should go to bed and receive good medical and nursing care and have a reasonable period for convalescence.

Colon Bacillus in Oysters.—Tonney and White recommend, as a tentative standard, a *B. coli* score, not to exceed 140, for shucked oysters and a standard, not to exceed 50, for shell oysters and hard shell clams. A study of 856 routine samples of shucked oysters received in the Chicago market during the season 1924-1925 shows that 71 per cent would have passed a *B. coli* score of 140. A study of 205 routine samples of shell oysters, collected in the Chicago market during the season of 1924-1925, shows that 97 per cent would have passed a *B. coli* score of 50, and 100 per cent of 164 samples of shell clams would have passed the same score. A study of 802 routine samples of shucked oysters collected in the Chicago market during the first part of the season of 1925-1926 shows a decided improvement in the sanitary quality of this product over that of the corresponding period of the previous season.

California and Western Medicine, San Francisco

24: 721-864 (June) 1926

Some Methodless Musing from Rome. L. Porter, San Francisco.—p. 753.
Sulpharsphenamine for Intramuscular Injection. I. C. Sutton, Hollywood.—p. 757.
Dermatology as Medical Science, Healing Art and Practice of Medicine. M. Scholtz, Los Angeles.—p. 759.
Physiology and Minor Pathology of Functioning Breast. J. W. Sherrick, Oakland.—p. 764.
Diagnosis of Chronic Amebiasis. W. T. Davidson, San Francisco.—p. 768.
Evolution of Surgeon from General Practitioner. A. S. Musante, San Francisco.—p. 770.
Conservative Treatment of Eclampsia. M. Schulze, San Francisco.—p. 771.
Chronic Polyarthritis. R. Smith, Los Angeles.—p. 775.
Skin Diseases in Twins. T. J. Clark and F. H. Stibbens, Oakland. —p. 777.

Journal of Biological Chemistry, Baltimore

68: 499-883 (June) 1926

Solubility of Vitamin B in Benzene. R. R. Williams and R. E. Waterman, New York.—p. 499.
Comparative Metabolism of Certain Aromatic Acids. X. J. B. Muenzen, L. R. Cerecedo and C. P. Sherwin, New York.—p. 503.
*Relation of Solubility to Absorption of Calcium Salts from Intestine. L. Irving, San Francisco.—p. 513.
Effect of Temperature on Catalase Reaction. I. Effect of Different Hydrogen Peroxide Concentrations. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 521.
Id. II. Loss of Catalase Activity. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 535.
Id. III. Temperature Effect at Different Hydrogen-Ion Concentrations. IV. Theory of Catalase Reaction. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 547.
Surface Tension as Factor in Detoxication. A. R. Rose and C. P. Sherwin, New York.—p. 565.
Effect of Dihydroxyacetone on Insulin Hypoglycemia. W. R. Campbell and J. Hepburn, Toronto.—p. 575.
Simpler Nitrogenous Constituents of Yeast. I. Choline and Nicotinic Acid. H. B. Vickery, New Haven, Conn.—p. 585.
*Preparation of Adenine Nucleotide from Tea Leaves. H. O. Calvery, Baltimore.—p. 593.
Study by Means of Ultrafiltration of Condition of Several Inorganic Constituents of Blood Serum in Disease. J. B. Pincus, H. A. Peterson and B. Kramer, Baltimore.—p. 601.
Oxidation-Reduction Potentials of 2-Oxydihydroindole-3-Proprionic Acid and Some of Its Halogen Derivatives. E. C. Kendall and J. M. Ort, Rochester, Minn.—p. 611.
Intermediary Carbohydrate Metabolism. I. Influence of Insulin on Levulose and Glucose Intravenously Administered. M. Wierzuchowski, Chicago.—p. 631.
Colloidal Properties of Surface of Living Cell. I. Conductivity of Blood to Direct Electric Currents. J. F. McClendon, Minneapolis.—p. 653.
*Vitamin E and Reproduction on Synthetic and Milk Diets. H. A. Mattill and M. M. Clayton, Rochester, N. Y.—p. 665.
Studies of Metabolism of Women. II. Cyclic Variations in Uric Acid and Total Nonprotein Nitrogen Content of Blood. R. Okey and S. E. Erikson, Berkeley, Calif.—p. 687.
Quantitative Estimation of Calcium, Magnesium, Phosphate and Carbonate in Bone. B. Kramer and J. Howland, Baltimore.—p. 711.
Inorganic Composition of Bones. J. Howland, W. M. Marriott and B. Kramer, Baltimore.—p. 721.
*Mineral Content of Human, Dog and Rabbit Skin. H. Brown, Philadelphia.—p. 729.
Lactone Formation from Gluconic Acids and Structure of Glucose. P. A. Levene and H. S. Simms, New York.—p. 737.
Comparison of Folin-Wu and New Benedict Method for Sugar in Blood and Cerebrospinal Fluid. J. D. Lyttle and J. E. Hearn, New York. —p. 751.
Estimation of Blood and Urine Sugar. S. R. Benedict, New York.—p. 759.
*Can Purines, Creatinine or Creatine Replace Histidine in Diet for Purposes of Growth? G. J. Cox and W. C. Rose, Urbana, Ill.—p. 769.
Availability of Synthetic Imidazoles in Supplementing Diets Deficient in Histidine. G. J. Cox and W. C. Rose, Urbana, Ill.—p. 781.
Animal Calorimetry. XXXII. Physiologic Behavior of Glucosane. H. J. Deuel, Jr., S. S. Waddell and J. A. Mandel, New York.—p. 801.
Antiricketic Substances. IV. Polymerization of Cholesterol. C. E. Bills and F. G. McDonald, Evansville, Ind.—p. 821.
Effect of Histamine on Acid-Base Balance. A. Hiller, New York.—p. 833.
Effect of Histamine on Protein Catabolism. A. Hiller, New York.—p. 847.

Absorption of Calcium from Intestine.—The results of Irving's experiments are in accord with the idea that calcium absorption is greatly affected by solubility conditions in the intestine. Under comparable conditions absorption of calcium salts proceeds in this order: acid acetate > neutral chloride > acid citrate > acid lactate.

Adenine Nucleotide in Tea Leaves.—A crystalline substance has been obtained by Calvery from tea leaves, which is identical with the adenine nucleotide obtainable from yeast nucleic acid.

Vitamin E and Reproduction.—Observations made by Mattill and Clayton on 150 animals on various synthetic rations indicate that vitamin E is a necessary dietary constituent for the establishment of fertility in male rats. Animals reared on synthetic rations devoid of vitamin E show the same critical period, from 90 to 150 days of age, beyond which the administration of vitamin E seldom restores the degenerated testes to normal function.

Mineral Content of Skin.—Data are presented by Brown giving the results of determination of calcium, magnesium, sodium and potassium in the skin of man, the dog and the rabbit. Individual variability in mineral content in the same species as well as distinct differences among different species are pointed out.

Journal of Urology, Baltimore

15: 505-626 (June) 1926

*Experimental Nephrotomies. III. Without Sutures, in Dogs with Single Kidneys. W. J. Carson and A. E. Goldstein, Baltimore.—p. 505.
*Spontaneous Rupture of Hydronephrosis: Case. R. M. LeComte, Washington, D. C.—p. 517.
*Rare Anomaly of Left Ureter. H. T. Low and J. C. Epler, Pueblo, Colo.—p. 523.
Cystoscopic Removal of Ureteral Calculi: New Instrument. H. L. Cecil, Dallas, Texas.—p. 529.
Composite Direct and Indirect Vision Cystoscope. G. Greenberg, New York.—p. 553.
Injuries of Urethra and Bladder: Thirty Cases. A. H. Peacock and R. F. Hain, Seattle, Wash.—p. 563.
*Herpes Zoster of Bladder. F. E. Dubois, New York.—p. 583.
Foreign Body in Bladder Complicating Postoperative Convalescence. V. C. Pedersen, New York.—p. 587.
Chemical Reaction of Prostatic Secretion and Semen Hydrogen-Ion Study. M. Muschat, Philadelphia.—p. 593.
Torsion of Testis. M. Meltzer, New York.—p. 601.
Sarcoma of Penis. E. G. Mark, Kansas City, Mo.—p. 611.

Experimental Nephrotomy.—The radical method of incision without capsule suture on single and pathologic kidneys was tried by Carson and Goldstein on dogs and found to be a safe procedure. Nephrolithotomy without suture was successful. Histologic studies on such kidneys demonstrated a minimum destruction of kidney tissue.

Spontaneous Rupture of Hydronephrosis.—In the case cited by LeComte, an infection of the kidney had occurred during childhood; the infection probably ceased at about the age of 10 years but left weakened kidney substance which permitted a hydronephrosis to develop. Since drainage through the ureter was not impaired, there was no pain to draw attention to the condition, although the degeneration progressed until a vessel ruptured and bled into the pelvis. Later a brisk hemorrhage occurred with the formation of clots too large to engage readily in the ureter so that the intrapelvic pressure was increased and the kidney ruptured. With relief of the intrapelvic pressure, the bleeding was checked somewhat, only to be renewed later, this time with the development of colic and a perirenal hematoma. The kidney was removed.

Duplication of Ureter.—Low and Epler report a case of duplication of the left ureter with ectopic opening in the urethra. The supernumerary ureter was completely occluded at the level of the sacral canal, the lower end of which became infected, dilated and acted as an elongated urethral diverticulum, which periodically would discharge its purulent contents into the urethra. As it was impossible to separate these two ureters, a complete ureterectomy and nephrectomy were done.

Herpes Zoster of Bladder.—The diagnosis in Dubois' case was based on the fact that cystoscopy showed typical herpetic vesicles coincident with a typical herpes zoster of the buttock of the same side. It is of note that the nerve supply of the buttock and of the base of the bladder is the same; i. e., from the sacral plexus. The diagnosis was further confirmed by the more or less rapid disappearance of both the cutaneous and mucosal lesions at the same time, without any particular treatment, other than mild urinary antiseptics and a local application of methylene blue to the external lesions.

Laryngoscope, St. Louis

36: 391-468 (June) 1926

Studying Action of Vocal Muscles During Phonation. L. E. Dodd, Los Angeles.—p. 391.
Glossopharyngeal Neuralgia. G. C. Albright, Iowa City.—p. 407.
Significance of Papilledema in Neurosurgery. W. Sharpe, New York. —p. 411.
Atypical Mastoiditis. J. J. McLoone, Phoenix, Ariz.—p. 418.
Middle Ear Abscess. M. M. Cullom, Nashville, Tenn.—p. 426.
Needlessness of Myringotomy in Acute Middle Ear Inflammations. C. Gluck, New York.—p. 427.
Zinc Ionization Treatment of Chronic Discharging Ears and Allied Conditions. J. McCoy, New York.—p. 434.
Radium in Diseases of Eye, Ear, Nose and Throat. L. A. Pomeroy and A. Strauss, Cleveland.—p. 437.
Use of Acriviolet in Diseases of Upper Respiratory Tract and Ear. A. J. Herzig, New York.—p. 445.

Michigan State Medical Society Journal, Grand Rapids

25: 259-326 (June) 1926

*Intestinal Infections and Food Disturbances of Infancy. I. A. Abt, Chicago.—p. 259.
Use and Abuse of Wassermann Reaction. L. W. Shaffer, Detroit.—p. 262.
Labor Following Hysterotomy. H. J. Prall, Eaton Rapids.—p. 268.
*Lipiodol in Otolaryngologic Diagnosis. R. H. Fraser, Battle Creek.—p. 270.
Intractable Bladder Disturbance in Women. W. R. Chynoweth, Battle Creek.—p. 274.

Treatment of Diarrheas of Infants.—Concerning active treatment, given a baby with a diarrhea, progressive emaciation, loss of appetite and vomiting, Abt warns against the use of laxatives. Cathartics increase peristalsis, the number of stools and the water loss from the body, and thus aid in the production of dehydration. They also irritate the intestinal mucosa, and they do no possible good. The treatment is mainly one of diet and hydrotherapy. Antiseptic drugs are no longer employed, and their use is obsolete. In extreme restlessness or severe diarrhea, small quantities of an opiate may be required. Further than this, there is no indication for the use of drugs in the food disturbances of infancy.

Lipiodol Injection in Otolaryngologic Diagnosis.—Injection of the upper respiratory spaces with roentgenographically opaque liquid, for which the term "opaque injection" is suggested by Fraser, is said to have such merits that it deserves development for frequent use in office practice. It is a safe procedure, as applied to the maxillary sinus, is always of interest in cases for which it is suitable, and is often of the highest value.

Radiology, St. Paul

6: 457-548 (June) 1926

Value of Concentrated Arc Light Treatment in Cases of Roentgen-Ray and Radium Lesions of Skin. A. Reyn, Copenhagen.—p. 457.
Interpretation of Pyelographic Shadow. B. H. Nichols, Cleveland.—p. 469.
Variations in Normal Pyelograms. D. N. Eisendrath and R. A. Arens, Chicago.—p. 474.
Shadows in Urinary Tract. O. Grant, Louisville, Ky.—p. 481.
Carcinoma of Cervix and Fundus Uteri Treated by Combinations of Surgery, Radium and Roentgen Ray. H. H. Bowing, Rochester, Minn.—p. 487.
Relative Value of Various Technics in Radiation Treatment of Carcinoma of Breast. G. E. Pfahler and B. P. Widmann, Philadelphia.—p. 493.
First Infection in Pulmonary Tuberculosis: Pleural Dissemination. L. R. Sante, St. Louis.—p. 504.
Radioactive Substances: Therapeutic Uses; Radium Treatment of Rectal Carcinoma. J. Muir, New York.—p. 509.
One Hundred Milliampere, One-Tenth of Second Technic. E. C. Jerman, Chicago.—p. 513.
Roentgen-Ray Treatment of Pulmonary Infiltration Induced by Massive Radiation of Chest. J. Roemer, Paterson, N. J.—p. 516.
Case of Gastric Diverticulum. J. D. Lawson, Woodland, Calif.—p. 518.
Polypoid Tumors in Pyloric End of Stomach: Three Cases. C. G. Sutherland, Rochester, Minn.—p. 520.
Periosteal Changes in Lymphatic Leukemia. H. K. Taylor, New York. —p. 523.
Subpleural Fibrolipoma: Case. G. H. Hess, Uniontown, Pa.—p. 525.

Southwestern Medicine, Phoenix, Ariz.

10: 247-288 (June) 1926

Public and Physician. G. A. Bridge, Bisbee.—p. 247.
Tularemia. A. Martin, Phoenix.—p. 249.
Newer Methods in Roentgen-Ray Diagnosis of Gallbladder Lesions. W. B. Bowman and L. S. Goin, Los Angeles.—p. 253.
Cesarean Section. E. P. Palmer, Phoenix.—p. 257.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

23: 87-164 (April-June) 1926

Measurements of Fourteen Hundred London Children. B. Myers.—p. 87.
*Varicella Encephalitis and Vaccinia Encephalitis. D. W. Winnicott and N. Gibbs.—p. 107.
*Acrodynia. A. E. Vipond.—p. 127.
*Case of Herpes Recurrens. C. I. Wright.—p. 132.

Varicella and Vaccinia Encephalitis.—A case of varicella encephalitis is reported by Winnicott and Gibbs and twelve other cases which have been described in the last thirty years are quoted or abstracted. A case of vaccinia encephalitis is also described, and forty-four other cases of possible vaccinia encephalitis are quoted. Two cases of measles encephalitis are described, and brief reference is made to the published cases.

Vaccine Therapy of Acrodynia.—In the treatment of acrodynia patients, Vipond claims universal success from the use of a vaccine made from a diplococcus which he recovered from an inguinal node. He gives each patient 1 cc. of the vaccine subcutaneously as a primary dose. In three days the patients show a marked improvement. He then gives from 1.5 to 2 cc. as a dose. After from three to four doses more of 4 or 5 cc. of the vaccine, the patients are practically cured.

Herpes Recurrens.—Wright reports the case of a girl, aged 12, who following a moderate attack of diphtheria, developed an herpetic eruption on both cheeks. Its distribution was asymmetrical, being over the subzygomatic and midmandibular regions on the left, and over the malar eminence on the right. Two days later several rounded, tense unilocular bullae were present on both sides. Culture of the contained fluid was sterile. No source of reflex irritation was apparent other than the recent throat condition. For the last three years the patient has had recurrent attacks of herpes on one or other cheek about three times a year, usually associated with the onset of a cold. In no previous attack had the lesions been bilateral. There was no personal or familial history of urticaria, asthma, migraine, gout, malaria, syphilis, or tuberculosis.

British Journal of Ophthalmology, London

10: 369-416 (July) 1926

Periscopic Lenses. A. S. Percival.—p. 369.
Iris Inclusion Complication. H. Herbert.—p. [illegible]
*Dislocation of Lens Occurring in Four Successive Generations. E. P. Cameron.—p. 384.
Pedigree of Lamellar Cataract. W. A. Khan.—p. 387.
Atypical Coloboma of Iris. W. A. Khan.—p. 389.
Familial Juvenile Degeneration of Macula. J. S. Steyn.—p. 391.

Hereditary Dislocation of Lens.—In the group studied by Cameron, there have been fourteen persons of the same family affected, of whom only one was a male. Five have had to be trained in institutions for the blind. In every case, both lenses have been dislocated, the vision has been seriously affected and a squint, either convergent or divergent, has been apparent. Among those affected were the great-grandmother (an only child), four of the latter's six children (five girls and one boy); eight of the sixteen children of the four girls affected—but none of the six children of the unaffected girl and boy.

China Medical Journal, Shanghai

40: 517-602 (June) 1926

Early Days of Western Medicine in Peking. J. G. Cormack.—p. 517.
Syringomyelia. A. H. Woods.—p. 534.
Blood-Sucking Arthropods in China. W. S. Patton.—p. 543.
*Typhoid in Korea. W. R. Cate.—p. 554.
Tinea Capitis in Chinese Orphanage. C. N. Frazier.—p. 558.
Advantages of Rectus Incision in Addition to Regular Herniotomy Incision in Certain Complicated Cases. R. V. Taylor.—p. 562.
Chinese Folklore: Conception and Maternity. A. E. Best.—p. 564.

Typhoid in Korea.—For the whole of Korea, Cate says, there were among the Japanese 5,980 cases of typhoid with 1,191 deaths during this four year period. This is 1,495 cases and 297 deaths per year. This is an incidence of 373 per hundred thousand population and a percentage mortality of 19 per cent, or 76 deaths per hundred thousand population. Among the Koreans, there were 8,093 cases and 1,522 deaths, equivalent to 2,023 cases and 380 deaths per year. This is an incidence of 11 per hundred thousand and a percentage mortality of 18 per cent, or 2 deaths per hundred thousand population. The conditions under which the Koreans live, their sources of water supply, washing food in dirty pools and streams, would lead one to expect a higher incidence among them than among the Japanese, but the figures given show a vastly greater frequency among the latter.

Edinburgh Medical Journal

33: 401-464 (July) 1926

Disciples of Boerhaave in Edinburgh. G. Newman.—p. 401.
*Retroperitoneal Cysts. R. L. Stewart.—p. 432.
Intersigmoid Hernia: Case. A. J. C. Hamilton.—p. 448.

Retroperitoneal Cysts.—Two cases are recorded by Stewart. In both, the cyst lay posterolateral to the cecum and ascending colon and, by forward compression of the ureter, caused hydro-ureter and hydronephrosis above. One cyst showed the typical structure of an ovarian cystadenoma in a portion of its wall, while the other revealed no characteristic features and only an atrophic epithelial lining. It appears justifiable to Stewart to infer that both these cysts were probably of urogenital origin.

Indian Medical Gazette, Calcutta

46: 161-192 (June) 1926

Longevity and How to Attain Long Life. J. N. Ganguli.—p. 161.
Antibodies. A. Roy.—p. 163.
Phlebotomus Argentipes. S. N. De.—p. 170.
Quinine Urticaria: Absorption of Quinine in Malaria. S. Chatterjee.—p. 171.
Physostigmine in Glaucoma. B. C. Vachhranjani.—p. 172.
Typhoid Fever. R. B. Ghosh.—p. 172.

Japanese Journal of Medical Sciences, Tokyo

1: 1-81, 1926 (Pathology)

Changes in Bone Marrow in Various Diseases: Pathogenesis of Primary Diseases of Myeloid System. M. Masugi.—p. 1.
Theory of Enteral Function of Lymphocytes. K. Satake.—p. 39.

Medical Journal of South Africa, Johannesburg

21: 265-294 (May) 1926

*Etiology of Gastric Ulcer. S. N. Sennett.—p. 268.
Typhoid Fever. J. D. M. Classens.—p. 271.
Examinations: Their Stress Factor in Mental Disease. M. J. Cohen.—p. 274.
First S. A. Medical Journal: Contribution to Medical History. C. L. Leipoldt.—p. 277.
Bone Grafting for Cranial Defect. J. J. Levin.—p. 283.

Etiology of Gastric Ulcer.—Clinical, pathologic and experimental studies have convinced Sennett of the truth of Virchow's teaching that the circulatory disturbance in the smallest arterioles in the mucosa is the basis of the genesis of gastric ulcer. This can be brought about by toxic infectious causes or by vagotonic and angioneurotic reflex action (constitutional) or by disease of the gastric mucous membrane (gastritis acida) or changes in the vessels (arteriosclerosis, heart failure) or by mechanical factors (stasis, pressure, blow) or by more than one of these factors acting simultaneously, giving rise to local necrosis of the mucosa. Under favorable conditions the necrosis remains localized and superficial (erosion) and shows a tendency to heal, but under unfavorable conditions, such as hyperacidity, deficiency of antipepsin, conditions of stasis, it penetrates into the gastric wall, becomes chronic and is the typical chronic gastric ulcer.

South African Medical Record, Cape Town

24: 241-264 (June 12) 1926

Exophthalmic Goiter. I. J. Drummond.—p. 242.
Id. II. Pathology. J. G. Johnstone.—p. 242.
Id. III. Electrotherapeutic Aspect. H. E. H. Oakeley.—p. 244.
Id. IV. Medical Aspect. C. Lundie.—p. 246.
Id. V. Surgical Aspect. A. D. Mackenzie.—p. 248.
Relationship Between Government and Medical Profession in South Africa. A. J. T. Roux.—p. 250.
Bacteriologic Research on Plague During 1925. A. Ingram and J. H. H. Pirie.—p. 252.

Annales de Médecine, Paris

19: 329-456 (April) 1926

The Acid-Base Balance. M. Labbé.—p. 329.
Basal Metabolism. E. J. Bigwood.—p. 345.
Action of Mineral Waters on Nutrition. Mouriquand et al.—p. 370.
The Alkali Reserve in Diabetics. M. Labbé et al.—p. 379.
*Insulin and Experimental Diabetes. H. Penau and H. Simonnet.—p. 401.
*Hypertension of Renal Origin. Weil and Guillaumin.—p. 415.
*Curable Ascites. N. Fiessinger.—p. 428.
Cholecystography. M. Labbé and A. Lomon.—p. 441.

Insulin and Experimental Diabetes.—Penau and Simonnet's experiments were made on three female dogs. After the whole of the pancreas had been removed, the animals were able to survive for over two years if they were given insulin and a certain amount of carbohydrates regularly. An exclusive meat diet seems to contribute indirectly to formation of ketogenic substances. The results were better with fractional doses of the insulin, injected at feeding times, rather than with a single large dose, daily. Two of the dogs gave birth to normal young. The fact that the matinal glycemia remained high in the gravid animals tends to confirm Allen's theory that the products of fetal pancreatic secretion do not pass through the placenta.

Arterial Hypertension from Defective Nutrition.—An increase of purine compounds in the blood cells, associated with that of sugar and cholesterol in the plasma, represents a particular syndrome. It is entailed by disturbed metabolism of nucleoproteins, carbohydrates and fats, due to liver deficiency from faulty nutrition. In Weil and Guillaumin's patient, aged 60, the humoral syndrome coexisted with peripheral arterial hypertension, which may be explained by a secondary insufficiency of the kidneys owing to the passage through them of the defective blood. The hypertension may be merely functional for a long time, before it becomes organic. Under appropriate diet and adequate care of the liver and intestines, this hypertension may improve or even disappear.

Cure of Ascites in Alcoholic Cirrhosis.—Fiessinger considers that ascites is induced by fatty degeneration of the liver cells. Under this degeneration, the size of the cells increases; consequently they compress the blood capillaries, causing intrahepatic hypertension. The ascites may disappear as the functioning of the liver improves. This seems to be demonstrated by a gain in weight, paralleling the decrease of the ascites; while loss of weight accompanies liver insufficiency. The efficacy of mercury and bismuth in certain cases seems to be due to their slightly toxic action, enhancing the activity of the cells. Cell division and hyperplasia create a new parenchyma. A diet containing carbohydrates, fats and proteins in adequate amounts and repose are the chief measures in treatment. They report fourteen personal cases which have been cured, enough of the liver apparently recuperating.

Archives des Maladies de l'Appareil Digestif, Paris

16: 513-632 (May) 1926

*Cholecystography. C. Bonorino Udaondo and E. Lanari.—p. 513.
Surgery for Gallstones. M. Einhorn.—p. 528.
Nervous Disturbances Associated with Anemia. P. Mathieu.—p. 536.
Clinical and Radiologic Diagnosis of Appendicitis. J. Baumel.—p. 552.

Visualization of the Gallbladder.—Bonorino Udaondo and Lanari used the sodium salt of tetraiodophthalein, by the vein or by the mouth, for visualization of the gallbladder, in about 100 cases. They describe their method and give eleven roentgenograms of the normal gallbladder and of conditions in different pathologic states. In one case the kidney on that side became visualized, as well as the gallbladder.

Lyon Chirurgical

23: 137-272 (April) 1926

*Surgery for Splenomegaly. A. Troell.—p. 137.
Cysts of the Mesocolon. M. Patel et al.—p. 169.
*Pulmonary Echinococcosis. E. Bressot.—p. 186.
Strangulated Obturator Hernia. P. Bonnet.—p. 199. C'cn.

Surgical Treatment of Splenomegaly.—Troell reports the results of surgical treatment of splenomegaly in eight patients with Banti's disease, in three with hemolytic jaundice, in two with pernicious anemia, in one with essential thrombopenia and in one with a tuberculous spleen. Splenectomy was applied in thirteen, and partial ligation of the spleen vessels, in two. There were no postoperative fatalities. Six died, from six months to three years after the operation. The influence of the splenectomy seemed to be most favorable in patients with hemolytic jaundice, essential thrombopenia or Banti's disease. It is possible that the resistance to tuberculous infection is reduced after this operation.

Treatment of Echinococcosis of the Lung.—Bressot operated on eight of eleven patients with hydatid cysts in the lungs. None of them died after the operation. In one instance, there was recurrence of the cyst, five months later. The operation is justified only with superficial and fully developed cysts. Local anesthesia, with procaine, should be preferred to chloroform. A long intercostal incision is better than a short incision with resection of a rib. One of the patients has been lost to sight; in the others, recovery persists from seven months to over four years. Bressot details the diagnostic signs of the affection.

Clinica Medica Italiana, Milan

57: 89-192 (April) 1926

*Arterial Hypertension. G. Gherardini and M. Brasi.—p. 89. C'cn.
Myelosis in Relation to Pernicious Anemia and the Hemorrhagic Diatheses. A. Esposito.—p. 123.
*Calcium Metabolism in the Tuberculous. G. Ferretti.—p. 149.
Is Tannin-Glycerin a Dependable Drug? L. Salazar.—p. 163.
*Glycemia Curve in Cirrhosis of the Liver. E. Puxeddu.—p. 174.

Clinical and Experimental Study of Arterial Hypertension.—Gherardini and Brasi tested with various drugs a patient with hypertension of renal origin and three without nephritis, recording the variations in the systolic, diastolic and capillary pressures and the relations between them. The lack of balance between the systolic and diastolic pressures and other phenomena convinced them that there must be some peripheral factor influencing them. The capillary pressure and the arterial pressure seem to be quite independent of each other, but not antagonistic. Their photomicrograms confirm the primary hypertrophy of the vessel muscle in nephritic hypertension and the secondary foci of fibroid degeneration. They tabulate for comparison the modifications induced by epinephrine, pituitary extract, pilocarpine, atropine and papaverine. The capillary pressure is above normal in nephritic hypertension but not in hypertonia. It is still dubious whether the hypertension is due to an essential hypertonia or to hypertension in Kylin's sense. Wide daily variations in the arterial pressure were frequently observed, even with nephritis.

Calcium Metabolism in the Tuberculous.—Ferretti's analysis of eight cases has demonstrated that there is no inevitable decalcification in the course of tuberculosis. The soil is not decalcified as the French school claims. The elimination of calcium by the bowel far surpasses that by the urine.

The Glycemia Curve in Cirrhosis of the Liver.—Puxeddu found in five patients with cirrhosis of the liver that the dextrose content of the blood, fasting, was about the normal figure. On various diets, and with test ingestion of 100 Gm. of dextrose, fasting, the reaction differed from the normal. It was wavering instead of regular as in the healthy, the rise in the glycemia being preceded by a drop, followed by a rapid ascent. The decline is slow, and the previous figure is not reached until in at least three and a half hours. The glycemia curve is far more instructive than the glycosuria curve, which is often misleading.

Folia Clinica Chimica et Microscop., Milan

1: 1-60, 1926

*Blood Ammonia as Gage of Liver Function. R. Burchi.—p. 3.
Study of Intestinal Chemism. R. Gualtier.—p. 36.
*The Bacteriophage. L. Villa.—p. 52.
The Wassermann Reaction in Concentrated Serums. L. Villa and C. Lucchini.—p. 58.

Ammonia Content of Blood as Gage of Liver Function.—Burchi found in tests on three healthy persons and three with congestion of the liver, that the ammonia content of the blood was twice as high in the latter group, and it was more than four times higher in two patients with cirrhosis of

cancer of the liver. After ingestion of 10 Gm. of ammonium citrate, the ammonia content of the blood increased in these groups, respectively, proportionally in half an hour. He reiterates that the ammonia content of the urine throws little light on liver functioning, but the spontaneous and induced ammonia content of the blood seems to be a dependable gage of the functional capacity of the liver.

The Bacteriophage and Collodion Membranes.—Villa relates that the enriched bacteriophage failed to pass through 2 per cent acetic collodion in ultrafiltration. It retained its specific lytic property unimpaired, however, through repeated rinsings with twice distilled water. This allowed complete isolation of the bacteriophage, thanks to the nonpermeability of the filter infiltrated with the collodion.

Studi Neurologici, Turin

301-310, 1926

*Optic Properties of Certain Cells. C. Rizzo.—p. 301.

Optic Properties of the Nuclei of Certain Cells.—Rizzo states that in frozen sections, treated with 5 per cent alcoholic solution of nitric acid (Lugaro), with fixation in paraffin, the nuclei of certain cells display a double polarizing power. It becomes more intense after removal of the paraffin. It is lost again if the section is mounted in balsam. His illustrations show the anisotropism of the entire nucleus of certain cells, and also in other cells in certain conditions of vitality. This double refraction may prove useful in diagnosis and in functional study of the endocrines or tissue cells. The sympathetic ganglions never exhibited this property under any conditions.

Archivos Arg. de Enf. del Ap. Digestivo, Buenos Aires

1: 605-768, 1926

*Chronic Retractile Odditis. D. del Valle and R. D. Dónovan.—p. 605.
Acute Compression of Duodenum by Mesenteric Glands. J. J. Spangenberg.—p. 621.
Recklinghausen's Disease with Cancer. C. Bonorino Udaondo and L. V. Sanguinetti.—p. 635.
*Rove's Epigastric Syndrome in Appendicitis. A. J. Pavlovsky.—p. 649.
Dolichogastria Versus Gastroptosis. T. Martini and J. Comas.—p. 654.
Cholecystography Shows Kidney Too. C. Bonorino Udaondo and E. Lanari.—p. 678.
Stomach Symptoms in Dread Psychoneurosis. Fernández Sanz.—p. 684.
Our Present Knowledge as to Bilirubin. G. P. Goñalons.—p. 693.

Persistence of Symptoms After Removal of Gallbladder.—Del Valle and Donovan say that this may be explained by malfunction of Oddi's sphincter, from retraction entailed by the preceding inflammatory process. In three cases described, clinically normal conditions were restored by stretching the sphincter and providing for drainage. There has been no return of symptoms, the interval since up to three years. In operating on the gallbladder, this sphincter should be investigated. After correction of the results of shriveling in this region, there is liable to be stasis in the duodenum and right colon. When this is the case, supervision and treatment as indicated are required for the rest of life.

Pain in Acute Appendicitis.—Pavlovsky confirms the diagnostic importance of the transient sharp pain in the epigastrium as the initial symptom in acute appendicitis. It occurs with or without vomiting, and it may be forgotten when the iliac fossa syndrome develops. The upper epigastrium is tender, the skin sensitive, and the left rectus muscle is rigid, while all of this syndrome is lacking on the right side at first.

Boletin del Instituto de Med. Exper. Buenos Aires

2: 143-301 (Feb.) 1926

*Irradiation of Egg and Embryo. A. H. Roffo.—p. 143.
*Cholesteremia at Different Ages. A. H. Roffo.—p. 195.
Sarcomas in Fishes. A. H. Roffo.—p. 206.
Chicken Embryo Extract Toxicity. Id. and López Ramirez.—p. 211.
Toxicity of Tumors and Relation to Proteins. Idem.—p. 216.
The Potassium: Calcium Ratio in Cancer Tissues. Roffo and Laserre.—p. 221.
Roentgenography of Stomach and Duodenum. J. C. Landaburu.—p. 231.
Carbon Dioxide in Cancer Blood. Roffo and De Giorgi.—p. 268.

Irradiation of Embryonic Tissue.—Roffo found that the tissues of the chick embryo developed the same as the controls when the irradiation—even with larger than lethal doses—had been applied to the egg. But this did not occur when the embryo had been removed from the egg a day or two before the irradiation, and thus disintegration had begun. The disintegration process could be arrested and the tissues develop the same as the controls if cultures were made of them one, two or twenty-four hours after the irradiation, thus changing the medium before the disintegration process is finished. Fourteen illustrations accompany the article.

The Cholesterol Content of the Blood.—Roffo found in 101 persons tested, aged from 1 month to 94 years, that cholesteremia increased with age after the first year up to the cancer age, and then decreased. During pregnancy the cholesteremia parallels that of the fourth to the sixth decade—the cancer age. This hypercholesteremia of pregnancy is significant in connection with the exceptionally rapid course of cancers in pregnant women.

Archiv für klinische Chirurgie, Berlin

141: 1-214 (May 22) 1926

Leptothrix Mycosis of the Tongue. Roedelius and Brack.—p. 1.
Tumors of the Testicular Vaginalis. S. Rubaschow.—p. 14.
*Histogenesis of Callus. H. Dieterich.—p. 27.
Elephantiasis of the External Male Genitalia. P. Gohrbandt.—p. 44.
*Temporary Interruption of Circulation in the Kidney. Hübner.—p. 51.
*Disturbances of Passage in the Duodenum. L. v. Bakay.—p. 109.
*The pH of Joint Effusions. C. H. Lasch.—p. 129.
Action of Magnesium Sulphate. J. B. Woitaschewski.—p. 135.
Oil-Ether Rectal Anesthesia. S. A. Smirnoff.—p. 151.
Development of Collateral Circulation. K. Hirase.—p. 158.
*Treatment of Surgical Tuberculosis. K. Mészáros.—p. 170.
*Metastatic Peritonitis. R. Girgensohn.—p. 196.
The Frontal Sinus. P. Schidlowsky.—p. 204.

Histogenesis of Callus.—In experiments on twenty rats Dieterich became convinced that the osteoblasts in callus are a product of the germinal perivascular tissue. The high grade tissue-forming reaction in the periosteum, seen in his experiments a few hours after fracture of the bone, could hardly be the work of the fully differentiated, functionally worn out cells of the resting periosteum. Only functionally fresh, indifferent cells in connection with the budding capillaries could be expected to work so rapidly. It is thus not the periosteum itself, but the capillaries budding from the old blood vessels which penetrate it, that are the important factor in the regeneration of bone.

Experiments in Clamping the Renal Artery and Vein for a Brief Period.—Hübner applied a clamp for a period of ten, twenty or thirty minutes to the renal artery and vein in 103 rabbits and cats. Functional damage to the kidney was seen in a rise in residual nitrogen and retention of water. Examination from one day to seven months after the operation showed general hyperemia, extravasation of blood into the parenchyma, hemorrhages in the capsule and areas of necrosis in the parenchyma. The large vessels and the glomeruli were wholly or almost wholly unaffected. The severity of the circulatory disturbances, especially the necrosis, was directly influenced by the length of time that the clamp had been applied. The disturbances lasted from five to six months. The conditions of the operation on the animals are comparable to those of nephrotomy on the human being, and in this connection the warning may be justified that clamping the renal artery and vein for longer than twenty minutes may produce severe circulatory disturbances.

Disturbances of Passage in the Duodenum.—Bakay reviews his observations under this head during the past ten years. The causes, as shown at operation in twelve cases, included compression from a carcinomatous lymph gland, kinking of the duodenojejunal flexure from adhesions, Treitz' hernia, pressure by the root of the mesentery (in one case, after encircling the duodenum, it was caught in a scar of the diaphragm caused by hernia), and cancer of the pancreas. Above the site of the obstruction the duodenum was greatly dilated, and the stretched portion had in nearly all cases sagged to the pelvis. Spastic contraction of the upper jejunal loop, of psychic origin, was diagnosed in one case. In a case of gastroptosis, the descending portion, which did not sag with the stomach, was compressed by the lesser omentum.

Hydrogen Ion Concentration of Joint Effusions.—In twenty-seven specimens, mostly from the knee joint, Lasch found that the reaction in acute cases was around the neutral point, with a tendency toward the acid side, while that in chronic cases was decidedly alkaline. The p_H appears to bear no relation to the underlying disease except in so far as this influences the duration of the effusion.

Treatment of Surgical Tuberculosis, with Special Regard to Its Pathology and to the Histogenesis of the Tubercle.—Mészáros holds that in the lymphocyte, which is the only cell of foreign origin in the primary tubercle, are concentrated in large measure the defensive forces of the organism. Our efforts must therefore be directed toward increasing its numbers. Means to this end are the climate of high altitudes, sunlight and iodine. Phototherapy must be regulated strictly to the patient's strength. Iodine in any way and in any form in which it may be made to enter the body stimulates the production of lymphocytes. He uses it to paint large areas of skin, and also in the form of intramuscular injections of iodiodoform glycerin. Iodides administered internally do not seem to act so well. But the iodine treatment also must be regulated with great care to the reactive strength of the patient. He has had excellent results from iodoform glycerin injections in cold abscesses, and regards the glycerin itself as possessing curative powers.

Metastatic Peritonitis.—Girgensohn describes eight cases of peritonitis, the metastatic nature of which was clear. The patients were all children. Three cases were caused by the pneumococcus, three by the streptococcus, and two by the staphylococcus; all but one of the last two were diffuse. The portal of entry was the lymphatic apparatus of the pharynx in three of the pneumococcus and streptococcus cases. One of the staphylococcus cases followed an otitis. Two of his patients recovered, in one the organism was the pneumococcus, in the other the staphylococcus. The onset is usually stormy, with symptoms of general infection on the first day. Pneumococcus peritonitis usually attacks little girls; the reason is not known. Streptococcus peritonitis is nearly always fatal.

Folia Haematologica, Leipzig

32: 177-261 (May) 1926

*Probable Error in Blood Counting. T. Brandt.—p. 177.
Variations in the Leukocyte Count. F. Michailow.—p. 196.
The High Color Index in Pernicious Anemia. E. Komiya.—p. 201.
Case of Microlymphoidocytic Leukemia. Gordon and Chesney.—p. 221.
*Cell Composition of the Bone Marrow. Weiner and Kaznelson.—p. 233.

The Probable Error in Blood Counts.—Brandt calculates the average error with different hematologic methods, and insists on the importance of estimating and allowing for it in serial tests. He says that the differential blood count is one of the most undependable methods in science. It seems to be applied without any strict critical evaluation of the results.

The Cellular Composition of the Bone Marrow.—Weiner and Kaznelson comment on the instructive details to be learned from puncture of the sternum in blood diseases. They tabulate them from thirty-five cases. Only with a true blood disease does the bone marrow show pronounced cellular changes. They correspond to the type of the disease. In pernicious anemia, megalocytes and erythrogonia appear in large numbers, but they disappear during the remissions.

Zeitschrift f. d. ges. Neurologie u. Psychiatrie, Berlin

102: 325-624 (May 11) 1926

Toxic Action from Spirochetes by Way of Cerebrospinal Fluid. A. Hauptmann.—p. 325.
Discovery of Center for Vision. S. E. Henschen.—p. 368.
*Angiospasm and Heart Spasms. G. Peritz.—p. 395.
Encephalography and Foramen of Monro. A. Rosenstein.—p. 420.
Modes of Reaction of the Brain. H. Krisch.—p. 425.
Rotatory Nystagmus in Semiblindness. J. Ohm.—p. 444.
Psychologic Study of Seventy Exhibitionists. Staehelin.—p. 464.
Reaction Time to Senseless and Purposeful Stimuli. Allers.—p. 548.
Gage for Physical Types in Psychiatry. M. P. Andreew.—p. 554.
Nature of Obsessions. E. Herzig.—p. 574.
Arteriosclerosis in the Brain. M. Kodama.—p. 597.
*Expressive Movements in Psychanalysis. H. Schwerdtner.—p. 620.
Electric Responses in Grafted Nerve. O. Schwab.—p. 622.

Heart Spasms.—Peritz has noted a heart spasm as the precursor of epileptic seizures in a number of cases. He explains how this throws light on tonus in general and on intermittent claudication. There is evidently some functional disturbance in the heart muscle, some vascular spasm, and similar spasms in parts of the brain would explain the epileptic seizure. His attempts to relieve the heart spasm with caffeine demonstrated that the epilepsy was improved by it also. Patients who had been having two or three seizures a week, have them only at six or eight week intervals when they take 0.2-0.3 Gm. of caffeine three times a day, plus 0.025 Gm. of phenobarbital. Karger has also reported excellent results from caffeine in treatment of epilepsy in children. Peritz ascribes this to the vessel-dilating action of caffeine. The angiospastic condition affects only certain organs or parts of organs. If it occurs in the central nervous system, the area involved fails to receive its due oxygen and nourishment; the resulting symptoms differ with the region involved, and according as the disturbances are due to irritation or to paralysis of the cells. Angiospasm is one of the main symptoms in spasmophilia in adults. Heart spasms are encountered almost exclusively in persons belonging to this category. Besides caffeine, alkalis and oxygen aid in overcoming the angiospasm.

Expressive Exercises in Psychology.—Schwerdtner remarks that the conventions of civilization are restricting physical movements more and more, and making them monotonous. The vogue of the dance is the reaction to this. There is a subconscious longing for a more natural physical expression of emotions. He uses this in psychotherapy, telling the patient to express in movements the theme of some musical work or the like. It is psychanalysis by acts instead of words, and he seeks to influence the mind by training in motor expression of emotional complexes.

Zeitschrift für Immunitätsforschung, etc., Jena

47: 97-212 (May 5) 1926

Normal Horse Serum as Antistaphylolysin. T. Benedek.—p. 97.
The Chemoreceptor Theory. R. Schnitzer.—p. 116.
A Lability Reaction in Serum of Immune Horses. J. Teichmann.—p. 134.
Identity of Pneumococci and Streptococci. R. Stanka.—p. 141.
Infection of Bacteria with Bacteriophages. K. Suzuki.—p. 143.
*Typhoid Infection in the Rabbit. W. Jelin.—p. 199.

Typhoid Infection in the Rabbit.—In seven experiments on rabbits injected with typhoid bacilli, Jelin found that the intoxication of which the animals died was due to endotoxins freed by the destruction of the micro-organisms, which, after an initial rapid increase in the blood, disappeared therefrom in a few hours. He was able to rule out body fluids and the microphages as the agents of destruction of the bacilli, and to locate that process in the cells of the reticulo-endothelial tissue. On blocking this tissue with injected india ink, the increase of the bacilli in the blood and body fluids went on unchecked, but without injury to the animal. Endotoxins injected into a rabbit with blocked reticulo-endothelial tissue proved harmless to the animal, which suggests that the endotoxins are able to produce intoxication only in connection with the reticulo-endothelial cells.

Ugeskrift for Læger, Copenhagen

88: 433-456 (May 6) 1926

*Arteriosclerosis. A. Faber.—p. 433.
Sanocrysin in Pulmonary Tuberculosis in Adults. L. Sayé.—p. 438.
Experimental Hermaphrodism. H. Seemann.—p. 443.
Traumatic Neurosis Versus Vertigo. C. Gram.—p. 445.

Arteriosclerosis in Man and Animals.—Faber shows that small doses of epinephrine, bacterial toxins and food containing much cholesterol modify the nourishment of the vessel walls in animals, and are able to induce changes identical with those in arteriosclerosis in man. It seems to be a benign proliferative and degenerative process that begins early in life and regularly progresses. The course is speeded up at times by exogenous factors. He thinks that, in future, treatment will be more along the line of regulation of the diet to ward off mechanical factors. Even slight cholesteremia might entail a mechanical element.